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SPRUE IN INDIA

A CLINICAL SURVEY OF 600 CASES

BY

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During the years 1942–4 British troops poured into India, finding their way into Bengal, the Arakan, to Imphal in Assam, and over the border into North Burma, the Chindit forces leading the way. In these areas dysentery and malaria were rife, as was that ill-defined syndrome of sprue. The object of this paper is to present observations, concerning aetiological factors, made on 600 cases of sprue; to describe the clinical picture; and to point out inadequacies in our present techniques of investigation. This seems all the more necessary as considerable numbers of such cases are being returned to England incompletely treated and ripe for relapse.

The difficulty here is well exemplified by the fact that no two authoritative definitions in textbooks are compatible. For the present purpose sprue is defined as a syndrome, consisting of diarrhoea, with the passage of light-coloured stools of high fat content, sore tongue, flatulent dyspepsia, and emaciation—all of these features being grossly variable in their presence or absence at one time and in their relation to one another. The term "parasprue" appears to serve no useful clinical purpose, and has not been adopted.

Malnutrition may manifest itself as the sprue syndrome. Steatorrhoea, however, is too variable a feature upon which to separate the two. The syndrome, as defined above, has been diagnosed as sprue even in the presence of an isolated normal faecal fat.

Seasonal Incidence

There are three seasons in India: the "cold," from October to February, with hot dry days and cool nights; the "hot" season, from March to June, when both day and night are almost unbearable; and the monsoon or rainy season, from June to September, when there is a slight decrease of temperature and much increase of swamp, flies, mosquitoes, and their accompanying diseases. In the hills, as at Imphal, the heat

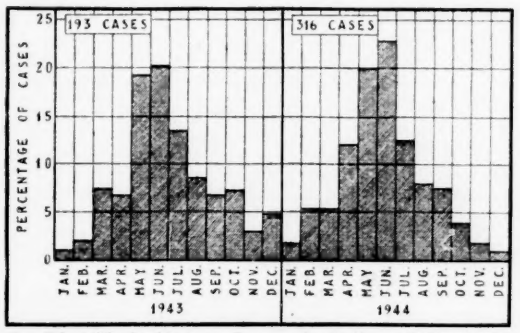

FIG. 1.—Monthly incidence of sprue in India and North Burma.

is not so extreme and the rains are heavier and of longer duration. Throughout India the incidence of sprue was highest in May and June, and minimal in November, December, and January in both 1943 and 1944 (Fig. 1). This seasonal incidence applies whether the cases originated in the cool hills of Assam (54%) or in the hot plains of Bengal and Bihar (23%) or from the rest of India (23%).

Geographical Distribution

The geographical distribution of 450 cases was as follows: Assam and North Burma, 54.2%; Bengal and Bihar, 23.1%; South India and Ceylon, 9.1%; Bombay Presidency, 8.9%; North-West and Central India, 4.7%. In view of the vast and frequent movements of troops occurring at the time, inferences must be limited. But it would seem justifiable to say that Assam, Bengal, and Bihar presented an environment favourable to the onset of sprue. In the Bombay Presidency, too, the incidence is almost equal to the rest of Southern India and Ceylon. In the Bombay Presidency the Western Ghats produce a moist, relatively cool climate during the months of maximal incidence. That cool, rainy conditions should be favourable to the development of sprue emphasizes its relationship with hill diarrhoea and the likelihood of relapse or occurrence in temperate climates.

Within a climatic zone sprue is regional. Of the cases here reported 14% occurred near Imphal, and the high incidence from this place continued long after the siege had been raised. Chittagong (9%), on the coast at the edge of the Ganges delta, produced a nest of cases—six from one aerodrome in two weeks. The difference in climate of these two places illustrates how the local regional factor may supersede that of the climate.

Duration of Service in India

The maximal incidence occurred after one or two years' service in India—45% of all cases, as shown in Table I. The earliest incidence was in the Red Sea, on the way out to India. Army statistics have shown that heat effects *per se* diminish

TABLE I.—*Period of Tropical Service before Onset of Sprue (475 Cases)*

6 mths. or less	6 mths. to 1 yr.	1–2 yrs.	2–3 yrs.	3–4 yrs.	4–5 yrs.	Over 5 yrs.
8·6%	15·8%	45·4%	24·9%	2·3%	0·9%	2·1%

very rapidly after the first hot season, so that adaptation to heat, excessive sweating, etc., are probably not important. Again, before the war tropical sprue was associated with long tropical residence.

Relation to Dysentery and Malaria

There has for long been a suspected relationship between sprue and dysentery. The following observations clarify the issue.

1. A comparison of the seasonal incidence of sprue and dysentery (amoebic and bacillary), in the same region over the same time, is shown in Fig. 2. All cases of both diseases were drawn from Assam, North Burma, and Bengal during the years 1943 and 1944. It will be seen that the incidence of sprue precedes that of dysentery surprisingly clearly, in a manner that makes it very unlikely that sprue follows an attack of dysentery at all commonly. Rather the reverse is suggested. The relation to chronic or relapsing dysentery is, of course, not to be derived from such cases.

2. The incidence of dysentery preceding sprue (23.6%) is shown in Table II. In 16.7% of cases dysentery had occurred more than

one month previously. In nearly 7% it had occurred within one month of the onset. In 340 control cases the incidence of dysentery was nearly 21%. The incidence is not significantly higher in those with sprue.

3. In individual cases a close relation is sometimes found to exist between an attack of amoebic or bacillary dysentery and the sudden passage of tropical sprue stools. It is difficult to believe that this is entirely fortuitous, though the effects of dysentery may be non-specific in activating the latent syndrome.

A group of 87 cases labelled "malnutrition" drawn from the Chindit Forces in June and July, 1944, were found to include 52 patients with the syndrome of sprue. These cases were seen under circumstances that rendered investigation incomplete, but glossitis, with diarrhoea, pale stools, flatulent dyspepsia, and marked emaciation, was present. Fat analysis of stools in 15 cases showed 12 with faecal fat over 30%. Malaria was found clinically and by positive blood-slide in 42%. Response to sprue therapy was unsatisfactory in many, but improved dramatically after malaria had developed and been treated. This effect of malaria and/or antimalarial therapy on the sprue syndrome was repeatedly demonstrated. If sprue is present concomitant latent malaria undoubtedly exacerbates it.

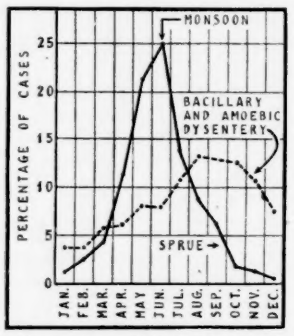

FIG. 2.—Comparison of monthly incidence of sprue (302 cases) and bacillary and amoebic dysentery (2,200 cases) in Bengal, Assam, and North Burma, 1943 and 1944. (Dysentery curve by courtesy of Lieut.-Col. C. S. Seward, R.A.M.C.)

Complexion

Racial selectivity of sprue is said to be according to pigmentation. The darkest negroes do not get it at all. In dark Indians it is said not to occur, while the brunt of the incidence falls on Anglo-Indians and Europeans. It is undoubtedly true that Indian troops have developed the full syndrome of sprue during the war, though difficulty in diagnosis is increased by the commonness of malnutritional anaemias. In British troops, though there is no difference in the incidence between dark and fair, it is the latter who have provided the majority of severe cases.

TABLE II.—*Incidence of Dysentery Preceding Sprue (525 Cases), and in Control Cases (340)*

Dysentery	More than One Month before Onset of Sprue	Within One Month of Onset of Sprue	In Control Cases
Bacillary	8·0%	2·5%	6·6%
Amoebic	5·1%	3·8%	6·8%
Bacillary and amoebic ..	1·7%	0·2%	2·4%
Clinical	1·9%	0·4%	5·0%
Totals	16·7%	6·9%	—
Total dysentery ..	23·6%		20·8%
No dysentery ..	76·4%		79·2%

Diet

Most troops first developed diarrhoea under jungle warfare conditions, but many were on ordinary field service rations. A large number of cases developed diarrhoea on a diet consisting of: protein, 95–103 g.; fat, 114–143 g.; carbohydrate, 425–435 g.; with calcium, 1.6–1.7 g.; iron, 20–25 mg.; vitamin A, 1,450 i.u.; thiamine, 1.2–1.8 mg.; riboflavin, 2.1 mg.; niacin, 16.3 mg.; ascorbic acid, 6 mg. (supplementary tablets, 50 mg., were added). It is interesting that this diet, well balanced and adequate on paper, was found monotonous, and parts of it distasteful, so that men were vomiting while trying to eat, and within 4 to 6 weeks on the diet developed diarrhoea and later sore tongue. Such was the story in the group of cases described above from Chindit forces.

Coincident dysentery and malaria must have played a part in the development of symptoms, but the stories of these patients strongly emphasize the psychological necessity for palatability of diet, as well as the correct caloric and vitamin value.

Clinical Picture

In these years 1943 and 1944 the clinical picture of sprue has been modified. The following is a brief description of the types seen.

The Classical Picture of Sprue.—This is well known. Its characteristics are a long history of some years' diarrhoea, with sometimes transient sore tongue. Asthenia, slight at first, increases with each bout and between them; the tongue becomes more sore, red, and smooth; loss of weight and pale large stools, at first intermittent, then become constant. Dyspepsia and distension are persistent. Emaciation progresses until the most stubborn officer is constrained to report sick some months or a year after he has suspected what was wrong with him. On examination signs are marked—a smooth sore tongue, abdominal distension, complete achlorhydria, high stool fat (40 to 50%), and macrocytic anaemia are all usually present with emaciation. This type of case was not common in our series.

Acute Sprue—Mild and Severe Forms.—In contrast to the classical picture the following is the type of story of the majority of our cases.

Onset.—A man aged about 25 arrives in India. During his first year he goes through jungle training and contracts the usual short fevers, dysentery, etc. He is sent to Assam after this and becomes involved in the fighting round Imphal and afterwards across into Burma. In these arduous circumstances he lives for varying periods, from a few weeks to months, on an adequate but monotonous diet, described previously. He naturally, therefore, attributes his onset of diarrhoea after 3 to 6 weeks to this. Diarrhoea may be acute of dysenteric type or insidious in onset; a week or two later anorexia becomes marked, and at the same time soreness of the tongue is noticed. Flatulent dyspepsia with heartburn increases, and vomiting occurs. He reports sick. Rapid improvement ensues if he is put in hospital on ordinary diet. The tongue is clear within a few days and the diarrhoea stops. His case is very much like that of clinical dysentery; exudate may or may not be found in the stools. He returns to duty feeling fairly fit. Within a week or two the diarrhoea returns; the stools are pale, sometimes quite fluid, sometimes large and bulky. He returns to hospital with the typical sprue syndrome, and finds his way in due course back to base, as either a mild or a severe case.

(*a*) *Acute Sprue* (*Mild*).—By the time the base is reached (perhaps 1 to 2 weeks are spent in transit hospitals) the man is apparently well. The tongue is normal; the stools coloured. Weight is not much reduced. He responds well to treatment and may be sent back to duty in a lower category. After a few weeks he again relapses and re-enters hospital. He repeats this tantalizing part of his story anything from two to six times before he is finally boarded out of India, still perhaps appearing well but now with glossitis or angular stomatitis and persistent distension. The stools are still pale, though their fat content may not be much raised.

(*b*) *Acute Sprue* (*Severe*).—The acute attack proceeds straight from onset to produce a dehydrated, emaciated patient with gross distension and a smooth, dry tongue. Steatorrhoea is present; anaemia may develop suddenly, necessitating transfusion; hypotension is present, and response to treatment is often satisfactory. Such cases form about one in ten of those seen. After months of treatment weight is slowly restored, two or three major or minor relapses occurring in hospital, particularly when the diet is increased. Finally he too is evacuated from India. On the average, with mild and severe cases, the period between onset and evacuation has been about one year.

Post-dysenteric Sprue.—During or after an attack of dysentery (usually amoebic) there occasionally develops a sore tongue, and stools are pale and contain 30 to 40% of fat. This change usually lasts for about a month, then clearing, but may continue and turn into a long-standing case of sprue. After repeated attacks of dysentery, steatorrhoea may come on

insidiously over months, with but little diarrhoea (3 to 4 stools a day) and minimal dyspepsia and glossitis.

A man with glossitis, angular stomatitis, marked emaciation, steatorrhoea, but no diarrhoea (2 to 3 stools a day) and no dyspepsia, with stool examination repeatedly negative for exudate and amoebae, died suddenly of a perforating ulcer of the caecum. Necropsy revealed a normal stomach and small-intestine mucosa, but gross amoebic ulceration from caecum to rectum was found.

This case suggests that the colon may be involved in the production of the sprue syndrome. The case also is of interest in that it was for 10 days diagnosed and treated as sprue. The patient did not respond to sprue diet and liver extract by mouth.

Subacute Hepatic Necrosis and Sprue.—Though subacute hepatic necrosis is not common, several instances of the condition showing the sprue syndrome have been seen at a time when jaundice was absent; bile pigment was absent from the urine and present in the faeces. The sprue symptoms, including the tongue and steatorrhoea, have improved as the liver has diminished in size.

Steatorrhoea with Minimal Glossitis.—This clinical picture of "incomplete sprue" as described by Manson-Bahr (1943) has been seen in 3.6% of cases. It has most often been found in fat analysis of the stools of chronic cases of diarrhoea treated as chronic dysenteries. Chronic diarrhoea in itself does not produce a rise in faecal fat as judged from chronic amoebic dysenteries so examined. Further examination of such cases of steatorrhoea brings to light achlorhydria and other changes suggestive of sprue. Response to sprue diet is good, but sore tongue may develop on it. These cases form one extremity, so to speak, of the sprue syndrome. Time often draws them further into the group. Giardiasis and tabes mesenterica cases have not been included in this group.

Glossitis with Minimal Steatorrhoea.—At the other extremity of the syndrome is the condition described by Manson-Bahr as "larval sprue" glossitis with slight, if any, steatorrhoea. Differential diagnosis from pellagra is sometimes made by the later appearance of the steatorrhoea, dyspepsia, etc.—sometimes not. Hamilton Fairley (1936) in his cases found 20% with less than 25% total faecal fat. In our own series 20% of cases had total faecal fat of less than 30%. It is probable that the numbers with normal faecal fat would be greatly reduced if the examination was repeatedly performed, which it never has been. Secondly, the percentage of fat is erroneous by the standard techniques used. These considerations lessen the importance of this apparently exceptional group of cases. The clinical features of such "low faecal fat" cases were not distinguishable from the others. Such cases are no milder, and their prognosis appears no better so far as response to treatment and tendency to relapse are concerned. The group provides many examples of the type of case which repeatedly relapsed in India before being evacuated.

Characteristic Symptoms and Signs

Mouth Lesions.—Glossitis has been practically constant (96%). The longer cases are observed the fewer exceptions are found. Soreness of the tip of the tongue, with redness, comes first, spreading to the sides. The changes are very variable; the tongue may become smooth and depapillated in a few days, and recover equally quickly. Tongue changes coincide to a day or two with diarrhoea in many cases. Glossitis responds surprisingly quickly to diet alone, but often nicotinic acid and riboflavin have seemed to accelerate improvement. Cheilitis and angular stomatitis have not been so common (40%), nor so quick in response to treatment. Fissures of the tongue may be congenital or acquired. It seems that the congenital type may deepen and ulcerate in their depth; the acquired may appear with or without oedema of the tongue. Response to treatment has shown shallowness and disappearance of some, while others, presumably congenital, are unaffected. The typical magenta tongue of riboflavin deficiency has not been seen.

Appetite.—Variability from voracity to extreme anorexia is, in all phases of the disease, as characteristic as either variation alone. The mechanism relating normal appetite to physiological need seems grossly deranged. While a return of appetite is welcomed, rash increase of diet subsequently produces dyspepsia, diarrhoea, and return of anorexia. This illustrates the process of relapse in unsupervised patients after discharge from hospital.

Vomiting has been present in 18%, particularly in cases of acute onset. *Heartburn* is common (70%), and causes considerable distress. Dysphagia has not been marked. *Dyspepsia* of the flatulent type is practically constant (94%). Fats exacerbate it; in spite of it, gastric acidity is usually normal—in at least 66%.

Distension.—One of the salient signs of sprue, distension comes early and disappears late, if not last of all. It is maximal in the hypogastrium. Abdominal girth alters by only 1 to 2 in. (2.5 to 5 cm.), though the patient's sensations lead one to expect more. Barium meal examinations did not show convincing evidence of small-intestine dilatation, but one instance of megacolon was found in a patient who was not more distended than the others and whose progress was better than the average. At his own wish he was retained in India under observation. When last seen, 1½ years later, he was quite well on active service. Actual dilatation of, as well as reflexes from, the gut, producing loss of tone of abdominal muscles, provides two elements in the production of distension. The latter would appear to be a common mechanism in sprue.

Diarrhoea.—This constant symptom is of first importance in diagnosis and management of sprue. Diarrhoea is often as acute though not as painful as in dysentery, and 15 to 20 watery pale stools are passed daily. Even the response to sulphaguanidine is similar to that in dysentery; but the stools are pale with no exudate, and there is no pyrexia or leucocytosis. The onset of sprue is often sudden and unexpected. An example of this is provided by a soldier who set off for his day's jungle training. Unusual and plentiful borborygmi with flatulence induced him to go to stool. On rising he turned, and what he saw frightened him; for, as he put it, he thought he had passed a "white elephant's stool." Diarrhoea preceded sore tongue by about six weeks in 80% of cases. Glossitis precedes diarrhoea very rarely. In a few instances asthenia, marked and persistent, has been a presenting symptom before diarrhoea.

Emaciation.—On admission most patients had lost some 25% of their normal Indian body weight. One-third returned only to within 19 lb. (8.6 kg.) of their normal weight by the time they were evacuated. The average loss ranged from 20 to 60 lb. (9 to 27 kg.) at a body weight of 130 to 195 lb. (59 to 88 kg.) respectively.

Cramps and Tetany.—Cramps, usually in calves and thighs, were present in 25% of cases. No observations on calcium and phosphates could be undertaken. Plain skiagrams showed no osteoporosis. Chvostek's and Trousseau's signs have been negative except in one case which later developed gross tetany while being shown at a clinical meeting. Total blood calcium was returned as 12 mg. per 100 c.cm. Though mental change was marked, there was no hyperventilation. Response to liver, nicotinic acid, calcium gluconate, salines, and transfusion, though satisfactory clinically, was unsatisfactory as to interpretation.

Skin Changes.—Dry skin is a common complaint, with falling out of hair. Scaling of parakeratotic nature has occurred in 27% of cases. It improves on treatment and body cleanliness—a luxury many men have been without. Follicular hyperkeratosis also clears rapidly in hospital. These changes suggested vitamin A deficiency, but dark-adaptation tests done in 20 cases were normal with one exception only. Pigmentation, usually consisting of scattered patches, occurred in 4%. In one case it suggested haemochromatosis. The liver was enlarged, but no glycosuria existed. The distribution has not suggested pellagra, nor has any been seen in the mucous membranes.

Circulatory Changes.—Hypotension—blood pressure below 100/70—occurred in only 8% of cases. These were all severe, with persistent signs of dehydration and low urinary chlorides. The hypotension persists, and rises only slowly in response to treatment. It is stable; pulse pressure alters little on exercise, and Aalsmeer's test with adrenaline shows only a slight fall in diastolic level—nothing to suggest thiamin deficiency. Oedema has not been at all prominent. No evidence of left- or right-sided heart failure has been found. Screening has shown no change in heart size or shape, but this examination has not been done on severe cases.

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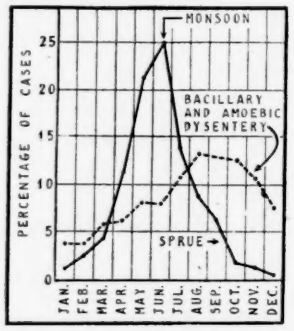

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Subacute Hepatic Necrosis and Sprue.—Though subacute hepatic necrosis is not common, several instances of the condition showing the sprue syndrome have been seen at a time when jaundice was absent; bile pigment was absent from the urine and present in the faeces. The sprue symptoms, including the tongue and steatorrhoea, have improved as the liver has diminished in size.

Steatorrhoea with Minimal Glossitis.—This clinical picture of "incomplete sprue" as described by Manson-Bahr (1943) has been seen in 3.6% of cases. It has most often been found in fat analysis of the stools of chronic cases of diarrhoea treated as chronic dysenteries. Chronic diarrhoea in itself does not produce a rise in faecal fat as judged from chronic amoebic dysenteries so examined. Further examination of such cases of steatorrhoea brings to light achlorhydria and other changes suggestive of sprue. Response to sprue diet is good, but sore tongue may develop on it. These cases form one extremity, so to speak, of the sprue syndrome. Time often draws them further into the group. Giardiasis and tabes mesenterica cases have not been included in this group.

Glossitis with Minimal Steatorrhoea.—At the other extremity of the syndrome is the condition described by Manson-Bahr as "larval sprue" glossitis with slight, if any, steatorrhoea. Differential diagnosis from pellagra is sometimes made by the later appearance of the steatorrhoea, dyspepsia, etc.—sometimes not. Hamilton Fairley (1936) in his cases found 20% with less than 25% total faecal fat. In our own series 20% of cases had total faecal fat of less than 30%. It is probable that the numbers with normal faecal fat would be greatly reduced if the examination was repeatedly performed, which it never has been. Secondly, the percentage of fat is erroneous by the standard techniques used. These considerations lessen the importance of this apparently exceptional group of cases. The clinical features of such "low faecal fat" cases were not distinguishable from the others. Such cases are no milder, and their prognosis appears no better so far as response to treatment and tendency to relapse are concerned. The group provides many examples of the type of case which repeatedly relapsed in India before being evacuated.

Characteristic Symptoms and Signs

Mouth Lesions.—Glossitis has been practically constant (96%). The longer cases are observed the fewer exceptions are found. Soreness of the tip of the tongue, with redness, comes first, spreading to the sides. The changes are very variable; the tongue may become smooth and depapillated in a few days, and recover equally quickly. Tongue changes coincide to a day or two with diarrhoea in many cases. Glossitis responds surprisingly quickly to diet alone, but often nicotinic acid and riboflavin have seemed to accelerate improvement. Cheilitis and angular stomatitis have not been so common (40%), nor so quick in response to treatment. Fissures of the tongue may be congenital or acquired. It seems that the congenital type may deepen and ulcerate in their depth; the acquired may appear with or without oedema of the tongue. Response to treatment has shown shallowness and disappearance of some, while others, presumably congenital, are unaffected. The typical magenta tongue of riboflavin deficiency has not been seen.

Appetite.—Variability from voracity to extreme anorexia is, in all phases of the disease, as characteristic as either variation alone. The mechanism relating normal appetite to physiological need seems grossly deranged. While a return of appetite is welcomed, rash increase of diet subsequently produces dyspepsia, diarrhoea, and return of anorexia. This illustrates the process of relapse in unsupervised patients after discharge from hospital.

Vomiting has been present in 18%, particularly in cases of acute onset. *Heartburn* is common (70%), and causes considerable distress. Dysphagia has not been marked. *Dyspepsia* of the flatulent type is practically constant (94%). Fats exacerbate it; in spite of it, gastric acidity is usually normal—in at least 66%.

Distension.—One of the salient signs of sprue, distension comes early and disappears late, if not last of all. It is maximal in the hypogastrium. Abdominal girth alters by only 1 to 2 in. (2.5 to 5 cm.), though the patient's sensations lead one to expect more. Barium meal examinations did not show convincing evidence of small-intestine dilatation, but one instance of megacolon was found in a patient who was not more distended than the others and whose progress was better than the average. At his own wish he was retained in India under observation. When last seen, 1½ years later, he was quite well on active service. Actual dilatation of, as well as reflexes from, the gut, producing loss of tone of abdominal muscles, provides two elements in the production of distension. The latter would appear to be a common mechanism in sprue.

Diarrhoea.—This constant symptom is of first importance in diagnosis and management of sprue. Diarrhoea is often as acute though not as painful as in dysentery, and 15 to 20 watery pale stools are passed daily. Even the response to sulphaguanidine is similar to that in dysentery; but the stools are pale with no exudate, and there is no pyrexia or leucocytosis. The onset of sprue is often sudden and unexpected. An example of this is provided by a soldier who set off for his day's jungle training. Unusual and plentiful borborygmi with flatulence induced him to go to stool. On rising he turned, and what he saw frightened him; for, as he put it, he thought he had passed a "white elephant's stool." Diarrhoea preceded sore tongue by about six weeks in 80% of cases. Glossitis precedes diarrhoea very rarely. In a few instances asthenia, marked and persistent, has been a presenting symptom before diarrhoea.

Emaciation.—On admission most patients had lost some 25% of their normal Indian body weight. One-third returned only to within 19 lb. (8.6 kg.) of their normal weight by the time they were evacuated. The average loss ranged from 20 to 60 lb. (9 to 27 kg.) at a body weight of 130 to 195 lb. (59 to 88 kg.) respectively.

Cramps and Tetany.—Cramps, usually in calves and thighs, were present in 25% of cases. No observations on calcium and phosphates could be undertaken. Plain skiagrams showed no osteoporosis. Chvostek's and Trousseau's signs have been negative except in one case which later developed gross tetany while being shown at a clinical meeting. Total blood calcium was returned as 12 mg. per 100 c.cm. Though mental change was marked, there was no hyperventilation. Response to liver, nicotinic acid, calcium gluconate, salines, and transfusion, though satisfactory clinically, was unsatisfactory as to interpretation.

Skin Changes.—Dry skin is a common complaint, with falling out of hair. Scaling of parakeratotic nature has occurred in 27% of cases. It improves on treatment and body cleanliness—a luxury many men have been without. Follicular hyperkeratosis also clears rapidly in hospital. These changes suggested vitamin A deficiency, but dark-adaptation tests done in 20 cases were normal with one exception only. Pigmentation, usually consisting of scattered patches, occurred in 4%. In one case it suggested haemochromatosis. The liver was enlarged, but no glycosuria existed. The distribution has not suggested pellagra, nor has any been seen in the mucous membranes.

Circulatory Changes.—Hypotension—blood pressure below 100/70—occurred in only 8% of cases. These were all severe, with persistent signs of dehydration and low urinary chlorides. The hypotension persists, and rises only slowly in response to treatment. It is stable; pulse pressure alters little on exercise, and Aalsmeer's test with adrenaline shows only a slight fall in diastolic level—nothing to suggest thiamin deficiency. Oedema has not been at all prominent. No evidence of left- or right-sided heart failure has been found. Screening has shown no change in heart size or shape, but this examination has not been done on severe cases.

Signs of Vitamin Deficiencies.—It was thought that these cases would present examples of typical deficiency states. This has not been so. *Vitamin A :*—The skin changes mentioned above were at one time taken as examples of A-deficiency, but normal dark-adaptation made this doubtful. Improvement in the skin condition occurs rapidly without any specific therapy. No evidence of deficiency of the other fat-soluble vitamins, D and K, has been found, in that no osteoporosis has been seen, and tetany was present in one case only, with normal blood calcium. The prothrombin time in several cases has been normal. *Nicotinic Acid :*—Most of the tongues seen have suggested this deficiency, but rapid response to a diet without addition of nicotinic acid therapeutically in many cases is surprising. In other more obdurate cases nicotinic acid has been effective. *Riboflavin :*—Though glossitis, with angular stomatitis, has been common, magenta tongues have not, and the rest of the syndrome—circumcorneal vascularization conjunctivitis, rosacea, etc.—has been absent. No case showing evidence of thiamin deficiency or scurvy has been seen.

Investigations

Appearance of Stools.—The typical large pale frothy stool is well known. Pallor at some period is almost constant: it is due not only to the fat in the stool but to alteration of the bile pigment. This alteration usually accompanies a raised stool fat, but not always, so that a pale stool may have a normal fat content, and a coloured stool may have a raised fat. It is important to remember this dissociation in diagnosis (Black and Fourman, 1945). Microscopically, fatty acid crystals, fat globules, and soaps may be seen, but they give little guide to quantitative fat excretion and cannot replace analysis of the stools.

Fat Analysis of Stools.—Analyses done on single stools show great variability. For example, two consecutive specimens so collected produced results of 21% and 36% total fat content respectively. As a routine a 24-hour collection of stools, well mixed, is a minimum procedure. Where progress is to be followed, three-day specimens, well mixed, should furnish the material. This should be done with the patient on a known daily fat intake for at least three days previous to and during collection. The fat-analysis figures given here have been produced by the inadequate present standard methods. Their error is great, and their interpretation must be treated with great reserve. In 10 normals total faecal fat averaged 30% on a diet of 70 g. of fat daily ; 20% of cases had faecal fat below 30%. In such cases repeated analysis might have revealed a rise at some time. Clinically these cases differed in no way from others with raised fat in the stools. Conversely, high faecal fat above 50% did not indicate a case of clinical severity. The percentage of faecal fat therefore does not seem to be related to prognosis or to therapeutic response. Duration of steatorrhoea is probably more important. Fat-splitting is excessive in sprue. In the majority of 274 cases the ratio of split to unsplit fat has been between 3 : 1 and 10 : 1 ; and in 6% it was over 30 : 1. This high ratio may be interpreted as due either to delayed absorption or to excessive lipase action.

Fractional Test Meal.—Hyperchlorhydria or normal acid curves were present in 66% of cases. In a further 27% hypochlorhydria (less than 10 units HCl) was present: this group includes those with apparent achlorhydria. No histamine was available.

Blood Changes.—Table III shows the blood changes. Severe anaemia has not been common even in the clinically severe cases, though the type with "blood crises" has been seen several times. These cases respond dramatically and permanently to one transfusion. Haemoglobin of less than 12 g.% was present in only 24% of cases. Age of patients and short duration of disease probably account in part for this. At a haemoglobin value of 12 g.% the M.C.H. is minimal 29.5 $\gamma\gamma$. Variation in either direction shows a rise in M.C.H. It appears that as the anaemia increases it becomes progressively more hyperchromic, and that on recovery this tendency remains.

TABLE III.—*Blood Pictures (250 Cases) (Grouped according to the Hb Level)*

Hb Group		% of Cases	Av. Hb (g. %)	Av. R.B.C. (M/c.mm.)	M.C.H. $\gamma\gamma$
%	G. %				
45–52	7–8	2·8	7·7	2·3	33·5
52–58	8–9	2·8	8·6	2·6	33·1
58–65	9–10	4·0	9·9	3·1	31·9
65–71	10–11	5·6	10·9	3·3	33·0
71–78	11–12	8·4	11·8	4·0	29·5
78–84	12–13	17·3	12·7	4·0	31·8
84–91	13–14	24·9	13·7	4·5	30·4
91–97	14–15	20·9	14·7	4·6	31·9
97–104	15–16	13·3	15·5	4·8	32·3

Blood-sugar Curves.—Few curves have been done in these cases ; those of severe cases have shown normal fasting values with low rise as described by Thaysen and Fairley.

Treatment

The object of treatment has been to make the patient fit to travel, not to complete a cure. Criteria of successful treatment have been: (1) ability to take an ordinary hospital diet ; (2) stools normal in number and appearance ; (3) weight restored to within 10 lb (4.5 kg.) of normal ; (4) distension *nil*, or slight only. Only 31% of our cases reached all these criteria—an index of the number needing further treatment on arrival in England. Treatment has been orthodox ; principles only will be mentioned.

Diet.—The high protein, low fat, low carbohydrate diet designed by Hamilton Fairley (1930) has been adopted. A series of five diets in ratios of protein 1, fat 0.5, carbohydrate 2, compiled by Napier (1943), have been used as a basis. Diet 4, with P. 168 g., F. 69 g., C. 235 g., Cals. 2,237, has been most commonly used. All mild cases can take it. When one realizes that milk diets (Manson), high carbohydrate diet (Collin), pure fruit diet (Van der Berg), have all been successful in sprue, one is inclined to ask, What is the principle of dieting in sprue ? Constancy and regularity of diet are important in themselves. Any increase, particularly of fat or meat, is often followed by a relapse. Liver, marmite, yeast, and bananas are included in the diets for possible therapeutic effects. Vitamins added have been nicotinic acid 50 mg. t.d.s., and riboflavin in some cases. Low fat diet is undesirable, since it excludes fat-soluble vitamins. Evidence of K-deficiency has been attributed to unwise fat restriction.

Bed Rest.—This is as important in sprue as in peptic ulcer, and should be enforced until diet 4 or equivalent is taken. Fatigue often precipitates relapse.

Parenteral Liver.—Unnecessary in most mild cases, parenteral liver (crude Indian preparation, assayed in England) is useful in all severe cases. The dose used has been 10 c.cm. i.m. for four days, followed by 4 c.cm. i.m. every two days.

Relapse.—(*a*) *Mild :*—Usually a return to previous diet on the scale, with bed rest, is sufficient. (*b*) *Acute :*—The sudden onset of 15 to 20 stools a day destroys very rapidly the benefits of weeks of dietetic discipline. Response to sulphaguanidine in the usual dosage, up to a total of 70 g., is almost always good. Sudden anaemia indicates whole-blood transfusion, but with severe dehydration plasma or saline is also indicated. Parenteral nicotinic acid, liver, and cortine have been used on these occasions.

Response to Therapy.—Though immediate response is good, many patients have left India showing one or more of the four signs of therapeutic failure: (1) One or more fluid or pale stools daily ; (2) distension ; (3) weight more than 10 lb. below normal ; (4) capacity for sprue diet 5 only. These signs indicate that remission is not complete. It is hoped that they have disappeared in England.

Prognosis

Immediate prognosis for life is good. No patient in the 600 of this series has died. Four deaths have been heard of during three years. Prognosis as regards function on returning to England is not known, but of 40 cases followed up for one year six have had severe relapses, and the remainder less severe recurrence of symptoms. None have been quite well (Lieut.-Col. Elder, personal communication). This information is depressing. It is hoped that a fuller survey will be less so.

It is apparent that, in the absence of knowledge as to the essential pathology of sprue, our methods of management and treatment are not curative. Even liver, nicotinic acid, and riboflavin ameliorate only.

Summary and Conclusions

The sprue syndrome has been modified by war conditions in India, bringing into prominence certain aetiological and clinical features. Such aetiological points are: (*a*) There is a marked seasonal incidence reaching its peak in the month of June. (*b*) The condition is prevalent in Assam, North Burma, Bengal, Bihar, and less so in Bombay Presidency. Whether military or geographical factors have predominated in this incidence cannot be stated. (*c*) There is a surprising lack of positive relationship with dysentery regarding the monthly incidence and the incidence of dysentery previous to sprue, which is not greater than in normals, but one still retains the impression that in individual cases dysentery may unmask the latent sprue syndrome. (*d*) Suppressed or latent malaria exacerbates sprue. In such instances eradication of malarial infection rapidly improves the sprue syndrome. (*e*) A fair or a dark complexion bears no relation to the incidence of sprue, but fair men form a majority of severe cases. (*f*) Acute sprue has developed on a well-balanced diet under jungle warfare conditions. Palatability of diet is as urgent a physiological need as calories.

The clinical picture of acute sprue has been contrasted with that of the classical disease, not often seen in this series. The syndrome following dysentery and subacute hepatic necrosis is described, and emphasis laid on the borderline cases with glossitis or steatorrhoea dissociated.

The complete pictures of vitamin-deficiency syndromes have not been met with. Signs of A-deficiency were equivocal. Nicotinic acid deficiency has been more frequent than riboflavin deficiency. No evidence was found of deficiency of vitamins B_1, C, D, and K.

Faecal Fats.—The methods of collecting stools at present standard are inadequate. Three-day collections on known fat diet, with quantitative measure of stool fat per day, are essential for accuracy. The degree of steatorrhoea has little prognostic value.

Blood changes have rarely been severe. With the haemoglobin less than 12 g. %, hyperchromic anaemia was more frequent.

Prognosis as to life is good, but as to function it is poor. There is reason to believe that a large percentage will progress into the classical form unless liver therapy is continued.

From the above description it is clear that in sprue the whole alimentary tract from lips to anus is affected—the accent of the process falling on different regions at different times. We are entirely ignorant of the nature of this process, though we know it to be modified by liver, nicotinic acid, and riboflavin. Nor are we well informed as to the nature of the dysfunctions in digestion and absorption in this condition.

The frequency of remission and relapse and the dissociation of signs and symptoms make assessment of diet or drug therapy very difficult. Many more controlled observations are needed, and until these are forthcoming theorizing on sprue is like trying to do a jigsaw puzzle without most of the pieces.

Our thanks are due to the Director of Medical Services, India, for permission to publish this paper.

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The University Extension and Tutorial Classes Council, in co-operation with the Provisional National Council for Mental Health, is prepared to hold this year, provided sufficient applications are received, a course on educationally subnormal children and mental defectives. It is hoped that the course can take place, as in recent years, at the London School of Hygiene and Tropical Medicine, Keppel Street, Bloomsbury, and the date fixed is March 25 to April 5. Students will be required to arrange their own residence. The course is intended for medical practitioners, more especially those who are engaged as school medical officers and as certifying officers to local authorities under the Mental Deficiency Acts. Registration fee 10s. 6d., fee for course £5 15s. 6d. Intending candidates should apply at the earliest possible date, but in any case by Feb. 28. The registration fee must be paid at the time of application and the fee for the course before March 16. If applicants withdraw before this date the fee of £5 15s. 6d. will be returned or carried forward to another course as preferred. Should the course have to be cancelled all fees will be returned. Cheques should be made payable to the Provisional National Council for Mental Health, and crossed Barclays Bank Ltd. All communications with reference to the course should be addressed to: Miss Evelyn Fox, C.B.E., c/o University Extension Department, University of London, 39, Queen Anne Street, London, W.1.

OUTBREAK OF WEIL'S DISEASE IN THE BRITISH ARMY IN ITALY

PART I: CLINICAL STUDY

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PART II: POST-MORTEM AND HISTOLOGICAL FINDINGS

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(Abridged)

PART I
CLINICAL STUDY

Weil's disease was first proved to be caused by the *Leptospira icterohaemorrhagiae* by Inado, Ido, and others, in Japan, in November, 1914. Cases were described among British troops fighting in the rat-infested trenches of the Western Front (Dawson and Hume, 1916; Stokes, Ryle, and Tytler, 1917). Between the wars the disease was shown to be prevalent in certain parts of Great Britain among fish-workers (Davidson and Smith, 1939), sewer-workers, and others. About 25% of rats appear to be infected with the leptospira even in areas where the disease rarely appears (Hurst, 1941). During the recent war the disease has not been common among British troops, presumably because static trench warfare has not been a feature. An outbreak in the British Army in Normandy has been recorded by Bulmer (1945).

The outbreak described in this paper occurred in Italy among soldiers who had all been bathing in the River Arno and its tributaries, and in bomb craters, which were just behind our forward positions, during August and September, 1944. The majority of the cases (17 undoubted cases and 2 probables) were dealt with by this military hospital.

Clinical Picture

All the 17 undoubted cases ran a similar course. Onset was sudden, with general weakness, shivering and high fever, nausea, and sometimes vomiting. Severe headache was common at onset, although in some cases delayed for 24 to 36 hours. General muscular aching and stiffness commonly developed with progressive severity over the course of the next few days, sometimes rendering the patient incapable of unaided movement, and in a few cases requiring morphine for relief. This severe pain decreased when jaundice developed. Neck stiffness was complained of in 3 cases.

Intense conjunctival suffusion with a typical varicosity of the arterioles was constant and early in appearing, and tended to persist until the patient began to improve. Icterus developed between the 3rd and 8th days of the illness, in all but one mild case rapidly became very deep, and in every case had a remarkable orange-yellow tint, this colour presumably being due to jaundice in a skin flushed by general arteriolar dilatation. The icterus persisted for weeks, and assumed a more greenish colour as conjunctival and skin suffusion disappeared. Profound anorexia and distressing vomiting characterized the early icteric phase. Tachycardia was marked.

Haemorrhages were seen in every case in this series, varying in degree and situation. Haemorrhagic herpes occurred in 9 cases; petechiae and ecchymoses of skin and mucous membrane were invariably found; subconjunctival haemorrhages and epistaxes were common, and small pre-retinal haemorrhages were observed in 3 cases. Visceral bleeding—in one case frank haematuria—was common, and its severity was a factor in causing death in 5 fatal cases.

All the cases began with high fever (103–105° F.), which settled by rapid lysis as a rule. The duration of the fever, which was unrelated to the severity of the illness, was 5 to 12 days, save in one case in which it persisted for 26 days.

A striking feature of the illness, common to all cases and appearing at about the onset of the icteric phase, was some degree of oliguria ; in 3 of the fatal cases and in 2 others this became anuria for a variable period. The urine contained a large quantity of albumin ; granular casts and red blood cells were common microscopical findings. Specific gravity tended to remain constant at about 1010, and the amount of bilirubin was less than would have been expected from the severity of the jaundice. During this ictero-oliguric phase extreme prostration, mental torpor, and quiet delirium were the rule. During this phase also the blood urea figures were raised considerably (save in the one mild case). Death occurred in 5 cases between the 7th and 14th days of illness—in four from uraemia and in one from uraemia and massive pulmonary haemorrhage.

The spleen was palpable in 1 case and doubtfully so in 2 others. Hepatomegaly was inconstant and never great. Polymorphonuclear leucocytosis occurred in all save the one mild case during the acute stage of the disease.

Treatment

Specific therapy employed was penicillin in 6 and antileptospiral serum in 3 cases. When the first cases were diagnosed the only information available was that *L. icterohaemorrhagiae* was insensitive to penicillin *in vitro* (Abraham *et al.*, 1941). It was decided, however, to use penicillin in "orthodox" dosage and await results. The dosage in the 6 cases was 15,000 units three-hourly by the intramuscular route to a total of 600–660 thousand units. Unavoidably penicillin could not be started in the pre-icteric stage, but between the 6th and 10th days of illness. One patient treated on the 7th day died after 210,000 units. Five cases recovered after illnesses of great severity, not differing from those which did not receive specific treatment. The absence of any obvious benefit on the fever, toxaemia, icterus, pulse rate, or urinary output discouraged us from using heavier doses of a drug then scarce. Antileptospiral serum, also scarce, was used in 2 cases in doses of 60 c.cm. intravenously on the 7th and 8th and the 6th and 7th days of illness respectively, with 1 death ; and in the third case, also fatal, 60 c.cm. was given only on the 7th day of illness. The serum had no obvious beneficial effect. In 8 cases (2 fatal) no specific therapy was used.

General measures were directed towards combating liver and renal failure. Fluids with added glucose were pushed by mouth, heavy doses of alkali given orally, and intravenous drip infusions of 3.3% glucose in 0.3% saline used as a routine. The impression was formed that unless oliguria can be rapidly abolished a fatal outcome is certain in this disease.

Laboratory Findings

[Here the authors acknowledged the help of three laboratories—No. 1 Central Pathological Laboratory, the Emergency Vaccine Laboratory U.K., and the laboratory of the British Traumatic Shock Research Team.]

Guinea-pigs were inoculated intraperitoneally with 5 c.cm. of blood taken from 15 of the cases on the 3rd to 11th days of illness, and with 10 c.cm. of urine (alkalinized) from the other 2 cases on the 13th and 16th days respectively. Eleven of the guinea-pigs remained well ; the other 6 became ill, and of these 5 died, and at necropsy showed to a varying degree jaundice, haemorrhages into the abdominal viscera and retroperitoneal tissues, and the characteristic "butterfly" haemorrhages in the lungs. Leptospira were grown from the kidneys of 3 of them. From 13 of the 17 cases in this series serum was examined for leptospiral agglutinins, some being tested against local "Cartwright" strains, some against stock "Winjberg" strains, and some against both. No serious antigenic difference between the strains was demonstrated. All the sera gave a "positive" result at a conservative diagnostic level of titres of 1/300.

Total leucocyte and differential counts were carried out on all 17 patients between the 4th and 8th days of disease. A leucocytosis ranging from 11,000 to 34,000 per c.mm. was found in 10 cases ; 5 in which the counts were below 10,000 reached levels of 13,000–20,000 by the 9th to the 15th day. In 12 of the 17 cases a blood urea estimation was carried out between the 5th and 15th days, and in 8 the figures obtained ranged from 150 to 288 mg. per 100 c.cm. There was evidence of some degree of nitrogen retention in all cases. The value of guinea-pig inoculation and the estimation of leptospiral agglutinins, total and differential leucocyte counts, and blood urea in the diagnosis of Weil's disease is amply supported.

Convalescence

Convalescence was slow in each of the 12 patients who recovered, and they were not considered fit for discharge to a convalescent depot until 17 to 20 weeks from the onset of their illness. During the convalescent period a series of investigations were made in an attempt to judge progress and to determine whether or not there was any permanent hepatic or renal damage.

With the exception of the one comparatively mild case, all showed a degree of anaemia. During the 4th week haemoglobins ranged from 70 to 80% (Haldane), with total red cell counts of between 3.5 and 4.5 millions per c.mm. This anaemia responded very slowly to iron therapy. The polymorphonuclear leucocytosis of the acute stage of infection disappeared during the 3rd and 4th weeks, and a total count below 10,000 per c.mm. with a relative lymphocytosis was common to all cases during the convalescent period. Sedimentation rates of between 20 and 40 mm. in 1 hour (corrected Wintrobe) were observed in all cases up to the 8th week, and figures of under 10 mm. were not encountered until the 10th week, thus confirming the slowness of convalescence.

Urea concentration tests were carried out between the 8th and 11th weeks of disease. In all but 3 cases a normal concentrating power was observed, and in these 3, on repeating the test later, the concentrating power was found to be satisfactory. Thus there was no evidence of gross renal damage as judged by the only renal function test readily available in the field. Hippuric acid liver function tests were carried out between the 8th and 15th weeks, and all but one case (and that case also on a later repetition of the test) gave results within the normal range. This again was the only suitable test available under field conditions, and showed no evidence of serious impairment of liver function.

Discussion

The 17 cases were all examples of the haemorrhagic form of the disease, and all but one were severe. Few diseases simulate the clinical picture outlined.

[Here the authors described other cases admitted to the wards in which the possibility of Weil's disease had to be seriously considered.]

During the period when the Weil's cases were in the wards over 1,800 cases of infective hepatitis were seen ; but in only a very small minority, with fever, muscle-aching, conjunctival suffusion, and occasional neck rigidity, was Weil's disease really simulated, and it was felt that the possibility of confusion between Weil's disease and infective hepatitis is remote.

It is probable, however, that even severe cases of Weil's disease may occasionally run an atypical course. Such a case was one of two "probables" in this outbreak, in which the diagnosis was thought to be enteric fever with jaundice until, after the patient's recovery, the leptospiral agglutination results became available and the patient's serum taken on the 13th and 23rd days of illness showed a rising titre from *nil* to 1/1000 respectively. Such a case illustrates the difficulties which may confront the clinician in a country where Weil's disease, enteric fever with jaundice, malaria with jaundice, infective hepatitis (and even amoebic hepatitis combined therewith) may all occur at the same time.

The occurrence of non-icteric cases of Weil's disease has been recognized in previous outbreaks (Davidson and Smith, 1939) ; attention was called by Bulmer (1945) to the existence of such undiagnosed cases in the Normandy outbreak. The recognition of non-icteric cases depends on two factors: the suspicion that cases of P.U.O. may be instances of this disease, and the conversion of that suspicion into a certainty by serum agglutination reactions. The second "probable" case in this series, the diagnosis of which was not made until long after the patient's return to duty, was suspected because of the excessive severity of muscle-aching, a seven-day fever with one spot of herpes

which became ecchymotic, the arteriolar type of conjunctival suffusion which was seen in all the undoubted cases of Weil's disease, and the finding of bilirubinuria on one occasion on the eighth day of illness. Serum taken from this case on the ninth day of illness agglutinated *L. icterohaemorrhagiae* to a titre of 1/3000. Undoubtedly some of the milder P.U.O.s seen were also cases of Weil's disease. Clinical features which should arouse suspicion that a P.U.O. may be due to Weil's disease are: severe muscle pains, leucocytosis, arteriolar suffusion of conjunctivae, neck rigidity, and an after-rise of fever; evidence of renal damage is not to be expected in such mild leptospiral infections.

We are in complete agreement with the view of Bulmer (1945) that further trials of penicillin, used early and in heavy dosage, are indicated in this disease. Information has become available that some strains at least of *L. icterohaemorrhagiae* (Cartwright and Brown included: Alston, 1945) are sensitive to penicillin *in vitro* (Alston and Broom, 1944), and the same workers have demonstrated that penicillin may have a curative action on leptospiral infections in guinea-pigs.

[The authors in an epidemiological note then gave a description of the circumstances leading up to this outbreak of Weil's disease. The weather was hot and the troops in the neighbourhood of the Arno, which was at its lowest, with large stagnant pools along the partially dried-up bed, took every opportunity to bathe. The water-side rat population, swelled by an influx from the devastated built-up areas in the vicinity, were in great evidence, and thus large numbers of soldiers were constantly in contact with water freshly contaminated with rat urine, and, given a sufficiently high leptospiral carrier rate in the rats, conditions were favourable for an outbreak of Weil's disease.]

As soon as the first cases were diagnosed an embargo was placed on all unauthorized washing, bathing, and vehicle-washing sites, and these measures, assisted by a drop in temperature, brought the epidemic to an end. As to the leptospiral carrier rate of the rats in the area, at least two out of ten rats caught were found to be harbouring leptospira in their urinary tract. No cases were reported among civilians, although the Italian medical authorities stated that Weil's disease not infrequently occurred in persons bathing in the Arno and Tiber. A surprising feature was the apparent immunity of the Indian troops in the area, although, if anything, they washed and bathed with total immersion more often than the British troops. This recalls their striking resistance to diphtheria, and is another example of an apparent racial immunity to a particular disease.

PART II

POST-MORTEM AND HISTOLOGICAL FINDINGS

This report is based on the necropsy and histological findings in 6 cases* from the epidemic. Ashe, Pratt-Thomas, and Kumpe (1941) discussed the pathology in a review of the literature on Weil's disease. Some of the lesions they describe appear to be terminal or autolytic; others are in agreement with the present findings.

Every case had deep icterus of the skin and other tissues usually affected in jaundice. The haemorrhages were petechial. The liver was of normal size or slightly enlarged, and, apart from jaundice, showed no abnormality to the naked eye. Microscopically there was never any trace of recent or healing necrosis nor of degeneration of liver cells. The chief matters of interest were progressive changes in pigment deposition and in the appearance of nuclei.

Two patients dying at 6 and 9 days had apparently normal livers. Two dying at 10 days had occasional small round masses of bile pigment in the bile canaliculi of the centrolobular part of the liver columns and a moderate amount of granular pigment in this area. The liver cells had a moderate number of double and of very large nuclei and rather numerous mitoses. Two patients dying at 13 and 15 days had much bile pigment centrolobularly and numerous double and very large nuclei, but only scanty mitoses.

The kidneys were somewhat enlarged; cortex rather broad and moderately bile-stained; medulla pale. Microscopically the glomeruli showed no abnormalities.

The first convoluted tubules had finely granular cytoplasm, tending in later cases to be bile-stained and rather foamy. The second convoluted tubules always contained many casts. The collecting tubules were also obstructed by casts in every case, particularly marked in the papillary portion of the medulla. The epithelium of these tubules showed considerable alterations. In a patient who died at 6 days it was very swollen, with many pyknotic nuclei; in one at 9 days the swelling was much less, and the number of nuclei considerably increased in the areas of proliferation; in one at 15 days the cytoplasm was still unduly dense and occasional pyknotic nuclei were still present. The intermediate zone always showed a considerable number of monocytes distributed diffusely, but with some foci of increased density. At 6 days these cells were nearly all of large mononuclear and plasma cell type, mainly collected in very thin-walled vessels; in later cases the larger cells in the vessels became less numerous, but there was an accumulation of smaller monocytes in the interstitial tissues of the zone.

In 4 cases there was a gross haemorrhagic bronchopneumonia; in 2 a gross haemorrhagic oedema of the submucosa of one or two loops of small intestine, and an acute ulcerative colitis in a third. In 2 cases the skeletal muscles and myocardium were deep purple in colour but showed no microscopical abnormality. Abnormalities in other organs were slight or not relevant.

Discussion

The entire absence of necrosis in the liver is of interest. It appears that for about the first 9 days of the disease there is some functional interference with the secretion of bile; after this the liver cells take up their function again, but the bile canaliculi in the liver columns are not able to drain the centrolobular cells adequately, and bile thrombi are built up there. The prominent lesions in the kidneys are the cast obstruction and epithelial damage to the collecting tubules and also in the second convoluted tubules, and the monocytic infiltration of the intermediate zone.

Some light is thrown on the functional significance of these renal changes by the histological lesions found in severe haemolytic reactions following transfusion.

[Here the author described the renal changes in three patients who became jaundiced after transfusion and died of uraemia. The histological appearances of the kidneys were indistinguishable from those in one of the cases of Weil's disease which had ended fatally in 6 days.]

This similarity between the appearances of the kidney in Weil's disease and in haemolytic transfusion reactions raises three possibilities for consideration: (*a*) that the casts have the same haemolytic origin in both cases; (*b*) that in both cases the oliguria and uraemia are due to a combination of cast obstruction and of epithelial damage to the collecting tubules; and (*c*) that the monocytic infiltration of small vessels and capillaries in the intermediate zone in both cases is related to drainage from interstitial tissue around the damaged medullary tubules.

Summary

Part I.—An outbreak of Weil's disease in Italy during Aug. and Sept., 1944, is described, and the clinical and pathological findings in 17 proved cases recorded and commented upon. Treatment is discussed with special reference to penicillin, which was used, without benefit, in 6 cases; a trial with larger dosage is urged. Difficulties in differential diagnosis are discussed. Laboratory investigations during convalescence are summarized and the circumstances in which the outbreak occurred are reviewed.

Part II.—Post-mortem and histological findings in 6 fatal cases are described, and emphasis is laid on renal changes—with their resemblance to those seen in fatal haemolytic transfusion reactions—and the absence of histological evidence of gross hepatic damage.

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* Part I mentions only 5 deaths. Presumably the sixth was one of a different series.

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PRIMARY TUBERCULOSIS IN CHILDHOOD*

BY

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The problem of tuberculosis in infancy and childhood—especially in infancy—is still far from being solved. The British Paediatric Association published a report (1943) on "The Early Diagnosis of Intrathoracic Tuberculosis in Childhood," and this report gave rise to considerable criticism on the part of the various tuberculosis organizations. Arising out of this a joint meeting of the Tuberculosis Association and the British Paediatric Association was held, and, in spite of the friendly spirit evident, it was clear that each party viewed the problem in an entirely different light. The Tuberculosis Association members quoted figures from their official returns, both of morbidity and of mortality, which were totally at variance with the clinical experience of the paediatricians, and in the main their conclusion was that "childhood tuberculosis is not of great importance to the public health services," and their plea was for the paediatricians to preserve a sense of proportion!

Now, there must be some explanation for this divergence of views about both the incidence and the importance of the condition. Are paediatricians wrong in stressing the matter as they do? Are they making too much fuss about something of less importance to the community than adult phthisis? I do not think so. Anyone working among children, and particularly in children's hospitals, and seeing the scores of infants dying of tuberculous meningitis must realize the gravity of the situation, considering that the majority of such infants die within three months of their initial infection and that every year thousands of infants and children are infected by phthisical adults. Although the majority pass through their primary infection and are none the worse for it, and although only a very small proportion progress to tuberculous meningitis, yet there is much pain and illness due to bone, joint, and kidney disease following a primary infection, as the records of any children's hospital will show.

It is interesting that the American public health administrators take a view similar to that of our tuberculosis authorities. Plunkett (1939) estimates that it costs 40 times as much to find a case of childhood tuberculosis as it does an adult case, and he therefore recommends investigating only children from known tuberculous households—which is what obtains generally in this country. Nelson (1942) says, further: "One must recognize the necessity of being selective in the expenditure of the efforts of public health agencies and the need for directing activities into the channels which will be productive of the greatest good to the general population."

Why is there this divergence of views? I think the tuberculosis officers do not get a fair view of the picture as paediatricians see it. Many cases are missed: many more are never seen by the tuberculosis officer; they are sent direct into hospital or to the out-patient department, and there their notification is either intentionally or inadvertently overlooked. Few convalescent homes will admit cases of tuberculosis even though they are certified as non-infective, as most of them are, and prolonged convalescence is an integral part of their treatment and it is unwise for them to go to sanatoria, where there is a risk of their coming into further contact with open tuberculosis. Furthermore, from a practical point of view, it would be impossible for tuberculosis officers, under existing conditions, to deal with all the cases, even if there were adequate accommodation.

Diagnosis

Primary tuberculosis is important because it is the commonest manifestation, because it is often difficult to diagnose, because it most easily leads to the tracing of the adult infector, and because when adequately treated it gives excellent results. As is well known, it is usually intrathoracic and due to direct droplet infection or, in the case of crawling infants, to infected dried dust from the floors or carpets of a house where a phthisical adult lives.

The ordinary symptoms of adult tuberculosis—cough, fever, night sweats, loss of weight, sputum and haemoptysis—are not common symptoms in primary tuberculosis in infants or children.

Cough.—Excluding children ill with bronchitis, pneumonia, and whooping-cough (and remembering that many children with primary tuberculosis are not ill when first seen) the commonest cause of cough in childhood is upper respiratory infection—especially tonsillar.

Fever.—The commonest causes are upper respiratory infection (including otitis) and pyelitis, both especially common in infancy. There is an "initial fever of infection" in primary tuberculosis which lasts for a week or ten days and is usually overlooked or considered influenzoid in nature. It is seldom of diagnostic value.

Night Sweats.—These are rare in children: they do not occur in primary tuberculosis. In infancy, rickets, digestive disorders, pyelitis, and pink disease may be causative.

Loss of Weight.—This occurs in many nutritional disorders in infancy and is of no real help in arriving at a diagnosis of primary tuberculosis.

Sputum.—Children rarely expectorate, except occasionally in bronchiectasis, and *haemoptysis* is even rarer. Neither of these is a symptom of primary tuberculosis.

In fact, the condition is often subclinical throughout, and there are no characteristic physical signs which can be considered pathognomonic.

Erythema nodosum and phlyctenular conjunctivitis are two commonly encountered conditions in paediatrics, and they are both very suggestive of primary tuberculosis. The younger the child the more likely are they to be tuberculous. They are not in themselves tuberculous, but are manifestations of tuberculin allergy. Erythema nodosum may occur in rheumatism, cerebrospinal fever, and as a sign of sensitivity to sulphathiazole; but by far the largest number of cases occur in primary tuberculosis, and it has been called "the exanthem of tuberculosis." It usually marks the onset of allergy at the end of the incubation period.

X rays are of value in the diagnosis of primary tuberculosis, especially serial films, as there are few other causes of persisting abnormal lung shadows in childhood.

The *tuberculin test* is the only sure diagnostic test. It is impossible to diagnose primary tuberculosis with certainty without its use (except by actually finding tubercle bacilli—as, for example, in stomach washings). Often it is the only positive finding at the time of examination, and further confirmation may not be forthcoming for months till skiagrams reveal a parenchymal or glandular lesion.

As a routine a preliminary percutaneous test (jelly, ointment, or plaster) may be used, but if this is negative a Mantoux test must follow before tuberculosis can be definitely excluded. The technique of intradermal injection is so easily acquired, however, and, properly performed, so little upsetting to children, that the Mantoux test still remains the method of choice as a routine. For infants and children it is safe to use 0.1 c.cm. of 1 in 1,000 old tuberculin (i.e., 0.1 mg.), except in cases of erythema nodosum and phlyctenular conjunctivitis, which are generally hypersensitive and in which a 1 in 10,000 solution should be employed. If the 1 in 1,000 solution gives no reaction and there is still doubt about the possibility of tuberculosis, then a 1 in 100 solution may next be tried, and if this too is negative a 1 in 10 solution. If there is no reaction to this the child (unless moribund) is not suffering from tuberculosis. Once a child is known to be Mantoux-positive, the fact should be noted in his record in the same way as his Schick test, immunizations, etc. It has been said, "If 100% be allotted to the Mantoux test in the diagnosis of primary tuberculosis, then *x* rays earn 25% and physical examination a fraction of 1%."

Of course, finding a positive reaction does not mean that the child is necessarily suffering from tuberculosis, but it does mean that he should be further investigated—first by skiagrams; if these show any abnormality a blood sedimentation test may give some indication of activity, and gastric lavage and guinea-pig inoculation may yield confirmatory evidence.

Treatment

If the sum total of these investigations confirms the diagnosis of primary tuberculosis, what is to be done with the child? The most important thing is rest in bed until the blood sedi-

* Abridged from an address delivered to the York Medical Society, Oct. 20, 1945.

mentation rate is normal and skiagrams show evidence of healing or the lesion appears quiescent; then fresh air, good food, adequate amounts of vitamins A, C, and D, and not too much fat and "malt and oil," which are often given to the detriment of the appetite.

There is abundant evidence that repeated exposure during the initial period after infection tends towards severe disease and liability to miliary spread. Therefore children, and especially babies, should be carefully watched for three months until the likelihood of meningitis is passed, and should be separated from any known contact. If a home contact must persist—e.g., the parent cannot go to a sanatorium—then the infant should be sent to a preventorium, where special care should be taken to avoid exposure to, or have immunization against, epidemics such as measles and whooping-cough.

There is, again, ample evidence that breaking the contact materially lessens the mortality and morbidity. Children with erythema nodosum need careful watching—being "hyper-allergic"—and should have bed rest for six weeks, after which time the chance of dissemination is less. After the period of bed rest the children should be allowed up for increasing periods daily and be permitted exercise also. School-children are preferably allowed to run wild for a term if reasonable hygienic conditions prevail at home and they can have plenty of fresh air.

Finding a positive reaction in a child—for example, by routine testing—does not involve an immediate diagnosis of active tuberculosis, a warning to the parents of possible meningitis, notification to the tuberculosis officer, and so on, but it does involve a little extra work. Park says, "There are two ways of finding out if an adult has tuberculosis: one is to find the bacilli in his sputum—the other, the infection in his infant." Under the age of 2 years over 80% of infections are intrafamilial in origin, so the parents and other members of the family (including nurses and maids, if any) should be examined and *x*-rayed. At school age the contacts are so many and varied that it is manifestly impossible to trace them all.

What is the Fate of the Primary Infection?

Either spontaneously or with treatment it may undergo fibrosis and calcification and heal completely. This is usual. Untreated, it may proceed to caseation in the primary focus, bronchogenic spread, glandular spread in the hilum, or blood-spread with resultant metastases. The site of these depends on the vessel involved and the number of bacilli entering the circulation. If a branch of the pulmonary artery be involved miliary tuberculosis results; if the pulmonary vein, either meningitis or, if only a few bacilli enter, isolated bone or kidney metastases. If the glands caseate and discharge into the thoracic duct both lung and systemic spread may occur.

Clinical Importance of the Primary Infection

A healed primary lesion does not confer complete immunity to reinfection; but partial immunity may result, with ability to withstand heavier infections or to cause greater localization of lesions. This limited immunity can be overcome by vast or virulent infection. Immunity takes some time to develop, perhaps 12 to 24 months. Wallgren says that, after immunity *is* developed, further exposure to infection is not harmful. There are two schools of thought about the importance of the primary infection—one that it is benign but that the resulting allergy is dangerous, the other that allergy is beneficial. Wallgren goes so far as to recommend vaccination with B.C.G. The relationship, if any, between allergy and immunity is not known.

Immediate Dangers of the Primary Infection

The majority of cases quiesce, but age is the important factor. The death rate is higher in the first two years of life than at any other period of childhood, because of lower resistance and greater and more repeated exposure (due to the intrafamilial nature of the infection). Wallgren (1941) found a mortality of 36.9% in the first year of life, and Price (1942), in Dublin, of 77% in 1937, reduced to 28% in 1940 after instituting routine tuberculin-testing in the newborn on the district and treating the positive reactors in preventoria. Terplan (1940), in doing 699 routine necropsies, found 35 deaths from tuberculosis, of which 30 were due to primary tuberculosis. Mitchell and Willis (1944) treated 213 children under the age of 3 for a year or more, with a 9% mortality, and Salomonsen and Traetteberg (1935) in a ten-year follow-up found a mortality of 4%. The conclusion is that, given adequate treatment for a sufficiently long period, the prognosis is excellent.

Extrathoracic Foci of Primary Infection

The alimentary tract is the chief site. Infection follows ingestion of bacilli, either human from dried dust or bovine from milk. The primary focus is in the ileum in the region of Peyer's patches, and the complex is completed by the mesenteric gland draining that area. As in other extrathoracic foci, the primary lesion is usually microscopic. The tendency is for the lesion not to localize as well as a primary *pulmonary* focus, and there is a danger of meningitis by rupture of the caseating mesenteric gland into a mesenteric vessel. Normally the gland calcifies.

I have seen one case of primary tuberculosis of the *skin* following ritual circumcision, the complex being completed by the inguinal gland. The *tonsil* is sometimes a primary site (as in the Lübeck disaster), and the cervical gland on the affected side then becomes involved.

Some Practical Points

Lastly, a few practical considerations concerning childhood tuberculosis in general (i.e., not limited to the primary form).

Watkins (1945) in Cardiff, working in a children's ward which specifically excluded cases of tuberculosis, discovered by routine Mantoux-testing that 22% of the children admitted reacted positively, and that 2.2% of these had, in fact, active tuberculosis. The presenting signs and symptoms of the intrathoracic cases were bronchitis and pneumonia, pleural effusion, wasting, erythema nodosum and phlyctenular conjunctivitis, and diarrhoea.

Capon (1937), working at Alder Hey Hospital, Liverpool, reported 56 cases of active tuberculosis among 200 children tested there (partly selected), with almost identical presenting symptoms.

What symptoms bring a child up to the out-patient department with the diagnosis "? tuberculosis," and from what is the child really suffering? I have found the commonest conditions to be: (1) cough; (2) glands in neck; (3) diarrhoea, especially if with a swollen belly; (4) limping; (5) swollen joints; (6) fever.

Cough.—This is most commonly due to upper respiratory infection. Post-pneumonic fibrosis, with or without bronchiectasis, is an occasional cause.

Glands in Neck.—Dirty heads, impetigo, and tonsillar and oral sepsis predominate. Cystic hygroma and secondary malignant glands occur rarely, but I have seen examples of both which needed differentiating from tuberculous glands.

Diarrhoea.—Rickets, Hirschsprung's disease, coeliac disease, and cystic fibrosis of the pancreas will all cause diarrhoea similar to that occurring in tabes mesenterica. The last-named is perhaps the commonest, and many of the cases labelled coeliac disease really belong to this group; they are differentiated from them by having less buttock-wasting, by having recurrent attacks of pneumonitis, and by clubbing of the fingers. Tabes mesenterica is even more to the fore in differential diagnosis, as if the lacteals become blocked in tabes—as they may from glandular pressure—the faeces become pale, foul, and fatty just as in pancreatic fibrosis.

Limping.—I think tuberculin-testing finds some of its greatest usefulness in orthopaedic cases. Lincoln has said: "The onus is on anyone making a diagnosis of tuberculosis in any child with a negative Mantoux unless the child is moribund."

Swollen Joints—or usually One Swollen Joint.—Tuberculous joints must be differentiated from rheumatism without carditis, Still's disease, and "tuberculous rheumatism." The Mantoux test is more valuable than skiagrams in joint disease, in cases of doubt. *Tuberculous rheumatism* is an allergic arthralgia rather than a true arthritis—not responding to salicylates, not having carditis, and having a positive Mantoux. It has been described chiefly in the French literature, but Sheldon (1945) recently reported a series of cases in this country.

Fever: Especially Continued Fever of Unknown Origin.—Urinalysis, a differential white blood count, and blood agglutinations will often clear up the diagnosis. A negative Mantoux with 1 in 100 will exclude tuberculosis as a cause.

Among in-patients the commonest diagnostic difficulty is probably differentiation between appendicitis and tuberculous

mesenteric glands. Here, to wait for the result of the Mantoux test is impracticable, and in cases of doubt the surgeon will always operate. If he finds a tuberculous adenitis no harm will be done, and an opportunity will be afforded for testing the potency of a new bottle of tuberculin on an undoubtedly positive case!

Conclusion

I may conclude by quoting a remark of Nelson's. He said: "One of the shortcomings of the average general practitioner is his failure to recognize the relationship of his private practice to the general health problems of the community. The ideal procedure would be for him to do tuberculin tests on all children under his care and order *x* rays on all positive reactors and their contacts." If we could get this far we should at last really be on the way to solving the problem of primary tuberculosis in childhood.

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INTELLIGENCE AND INFANT MORTALITY IN PROBLEM FAMILIES

BY

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The objects of the investigations described in this paper were: (1) To discover the number of problem mothers in an area which was predominatingly rural, with a population of 90,800. (2) To ascertain the intelligence of these problem mothers. (3) To discover the effect on the development of children living in the inefficient domestic environment made by the problem mothers and to compare them with children from normal homes (controls). This is of great interest when the intelligence of problem and control mothers is the same. (4) To examine the rate of infant deaths occurring in problem and control families.

A "problem mother" is a woman who does not give her children at least the minimum of care and refuses to co-operate with the health visitors and make effective use of the technical advice available to her. The fathers have not been included in the investigation; but it is not denied that their influence on the children is considerable (though probably less than the mothers').

The problem families were detected through the affected children. These children became known through the school medical officers, the health visitors, and the school nurses. Children were sometimes reported from other agencies such as the N.S.P.C.C. In all these cases the homes were visited and the mothers instructed by the health visitors. When the mothers persistently failed to take advantage of this teaching and continued in their inefficient domestic practices the family was recorded in the problem group. Whenever there was any doubt about recording a family in the problem group a special visit was made by the supervising health visiting staff. In the course of the survey I have personally visited most of the families. In these ways a uniform standard was preserved.

For the purposes of this survey it was necessary to make a comparison with a number of families whose domestic management was at least moderately efficient, and who lived under the same general economic standards as the problem families. These were the control families; they were selected by the health visitors. The standard of housing of both the problem and the control families was similar. There is room for improvement in some of the houses in both groups. Most of the families under review come within the Registrar-General's Social Class V. Although the whole summary took many months the records were kept completely up to date; the following tables therefore record the position on the day when the survey was completed. The preliminary ascertainments made are expressed in Table I:

TABLE I.—*Survey Area*

Population	90,800
Number of families with pre-school and elementary-school children	7,215
Number of problem families	89
Percentage of problem families	1·23
Population of pre-school and elementary-school children (7,295 + 10,168)	17,463
Number of pre-school and school children in problem families	333
Percentage of problem family children compared with all children in the area	1·9
Annual infant mortality rate for the area (1944)	38·7
Infant mortality rate for the area during the last 10 years	48·5

The total number of families was estimated from the records of pre-school and school children in a section of the area, and the number in the whole area was calculated from this information.

In my view, one of the most important observations to make in a problem mother is an assessment of her intelligence. When the mother has intelligence there is a possibility of teaching her by detailed and persistent instruction, but with an intellectually defective mother improvement is almost impossible. Intelligence can be estimated in various ways, but after an investigation of many tests the Raven progressive matrices were chosen as being most suitable for assessing intelligence in people who may have very little general education but may nevertheless be reasonably intelligent. It will be seen from the tables that the Raven test makes use of five grades. Some of the testing was carried out by specially selected health visitors and some by myself. The selected health visitors were first tested and then instructed.

Comment on Table II

The problem families (89) were classified according to the type of neglect found in the children. By far the most were in Group I, "general neglect"; there were a number of families in which the children suffered from persistent pediculosis capitis and in which the general neglect was less obvious than the pediculosis (Group II). When the general neglect was also very marked they were placed in Group III. The feeding of all these children was usually unsatisfactory, but when this was obviously bad and the children also suffered from pediculosis the families were placed in Group IV. The average age of the school-children in problem and control groups was similar (it is recorded in detail in Table III).

The educational position of all the school-children is shown. This was obtained by reports from the head teachers. The percentage of those retarded two or more years has been also calculated. Objection might be made to the use of the educational attainment as an index of intelligence, but means were not available for carrying out tests such as the Binet-Simon on the 409 school-children. It will be observed that those in the problem families were very considerably retarded. In all problem groups a proportion of the children were retarded sufficiently to bring some of them within the mentally defective classification Of the 223 children 55 (24.6%) were retarded three or four years, and if the children of only two years' retardation are also included, almost 50% of the school-children from the problem families were retarded. The corresponding figure for the control children was 9%.

This retardation was highest (65%) in the children suffering from pediculosis and an inadequate diet (Group IV), and lowest (37%) in the children who suffered only from persistent pediculosis (Group II). It is interesting to note that the only children described by the head teacher as "advanced one year" came from the group with the highest percentage of retarded children. These children have had school meals, but so have some of the other children in families known to have had an inadequate diet.

The infant mortality rate in the problem families was double the rate in the control families. In the problem families the highest infant mortality rate occurred in the "general neglect" group. The numbers in Group IV were insufficient for a reliable rate to be calculated.

TABLE II.—*Classification according to Type of Neglect*

Type of Neglect found in the Children	Number of Families	Number of Children				Educational Position of Children								Mother's Intelligence								
		Pre-school	School	Left School	Total	Advanced (Years) 2	Advanced (Years) 1	Normal	Retarded (Years) 1	Retarded (Years) 2	Retarded (Years) 3	Retarded (Years) 4	Percentage of School-children retarded 2 Years or Over	Mentally Superior	Above Average	Average	Below Average	Intellectually Defective	Refused Test	Total Infant Deaths	Child Deaths over 1 Year	Total Births	Infant Mortality Rate
General neglect (Group I)	46	74	103	31	208			25	22	27	14	15	54·0			15	18	12	1	17	3	228	74·56
Persistent pediculosis (Group II) ..	22	16	57	17	90			20	16	9	9	3	37·0		1	3	12	6		4	2	96	41·67
Persistent pediculosis and general neglect (Group III)	13	12	40	10	62			12	9	12	5	2	45·5		1	5	3	4		4	2	68	58·82
Persistent pediculosis and inadequate diet (Group IV)	8	8	23	2	33		3	3	2	8	5	2	65·0				4	4		1	3	37	*
Total problem	89	110	223	60	393		3	60	49	56	33	22	49·7		2	23	37	26	1	26	10	429	60·6
Total control	89	132	186	35	353	2	11	117	39	15	2		9·1	3	16	38	32			11	3	367	30·0

* Numbers insufficient for rate to be calculated.

TABLE III.—*Classification according to the Intelligence of the Mothers*

Intelligence of Mother		No. of Families	Number of Children				Average Age of School-children	Educational Position of Children								Total Infant Deaths	Child Deaths over 1 Year	Total Births	Infant Mortality Rate
			Pre-school	School	Left School	Total		Advanced (Years) 2	Advanced (Years) 1	Normal	Retarded (Years) 1	Retarded (Years) 2	Retarded (Years) 3	Retarded (Years) 4	Percentage of School-children Retarded 2 Years or Over				
Mentally superior	Problem	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Control	3	5	6	4	15	9 years 7 mths.		2	3		1			16·6			15	
Above average	Problem	2	3	5	2	10	10 years 2 mths.			1	2	1		1	40·0			10	
	Control	16	21	21	9	51	10 years 2 mths.	1	1	15	3	1			4·7		2	53	
Average	Problem	23	26	64	15	105	9 years 10 mths.			20	11	18	9	6	51·5	4	4	113	35·4
	Control	38	59	86	15	160	9 years 2 mths.	1	3	56	20	5	1		6·9	4	1	165	24·2
Below average	Problem	37	52	84	25	161	10 years 2 mths.			29	17	21	9	8	45·2	11	3	175	62·9
	Control	32	47	73	7	127	9 years 5 mths.		5	43	16	8	1		12·3	7		134	52·2
Intellectually defective	Problem	26	29	65	16	110	9 years 10 mths.		3	10	18	15	12	7	52·3	11	3	124	88·7
	Control	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refused test	Problem	1		5	2	7	9 years 10 mths.				1	1	3					7	
Total	Problem	89	110	223	60	393	10 years		3	60	49	56	33	22	49·7	26	10	429	60·6
	Control	89	132	186	35	353	9 years 5 mths.	2	11	117	39	15	2		9·1	11	3	367	30·0

Comment on Table III

In this table the problem families were classified according to the intelligence of the mothers, whether problem or control. It will be noticed that no control mothers were found to be "intellectually defective" and no problem mothers were found to be "mentally superior" and only two "above average." When these three groups have been excluded, a number of control and problem families, whose mothers were in the "average" and "below average" groups can be compared.

For instance, in the families with mothers of "average" intelligence just over 50% of children were retarded two or more years in the problem families, but under 7% of children in the control families. In the families with mothers of "below average" intelligence 45% of the children from problem families were retarded two or more years, while only 12.3% of children from the control families were retarded. The average age of the school-children in the problem and control families is shown, and it will be observed that the ages make the groups reasonably comparable.

The infant mortality rates for the various groups bring out the importance of maternal intelligence. In the problem group where the mothers were intellectually defective the rate was as high as 88.7, and this decreased as the intelligence of the mothers improved. In the control group a similar relation can be observed, although, as would be expected, the infant mortality rate is lower than in the problem families where the intelligence groups are comparable.

Other Observations

A table was constructed showing the cause of infant deaths classified in groups according to the mothers' intelligence. This is not published, as it was felt that the numbers were insufficient for any reliable conclusions to be made. The number of abortions, stillbirths, and cases of icterus neonatorum have also been recorded, and further observations are being made to correlate these findings with the Rh factor. Experimental intensive domestic instruction is being given by trained domestic science workers to some of the problem families in the "average" and "below average" groups; the effect of this will be observed at a later date.

Summary

The number of problem families and their children have been recorded in a survey area.

The intelligence of the mothers was ascertained, and only 29.2% were found to be intellectually defective and consequently ineducable.

The most serious detectable change in the children (even when the mothers were of average intelligence) was a very considerable retardation in school, amounting to mental deficiency in some of the children.

The infant mortality rate was shown to be directly related to the intelligence of the mothers. In problem families of the lowest intelligence it was as high as 88.7.

I should like to record my appreciation of the work carried out by the health visitors. The merit of their usual routine work is insufficiently known and valued. In this inquiry their duties were temporarily increased, but they showed great willingness and an understanding of the objects of the survey.

The Minister of Health has sent a mission to study public health administration, particularly hospitals and health centres, in Sweden and Denmark. The leader of the mission is Capt. J. Snow, and the other members are Dr. J. A. Charles, deputy chief medical officer of the Ministry, Mr. S. F. Wilkinson, a principal assistant secretary, and Major D. Bruce, the Minister's Parliamentary Private Secretary.

SPONTANEOUS HAEMOTHORAX

BY

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AND

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The recognition of the presence of fluid within the pleural sac offers little difficulty as a rule, but the nature of the fluid as determined by thoracentesis may on occasion prove surprising. Such an instance occurred in the case reported here when, in the absence of a history of trauma, the fluid withdrawn appeared to consist of pure blood.

Case Report

The patient, a man aged 44, a civil servant, was in good health until Aug. 19, 1944. On that date, while riding in a tramcar, he was suddenly seized with pain of knife-like severity in the middle zone of the left side of the chest. Breathlessness developed simultaneously. He was weak and collapsed, and had to be assisted home. The pain remained for several days, gradually decreasing in severity, but the dyspnoea persisted.

He was admitted to hospital eight days after the onset. The general condition and colour were good, but he looked anxious and his respirations were increased, although cyanosis was not evident. He was orthopnoeic, and the adoption of the prone position increased the respiratory distress. The mobility of the left side of the chest was markedly restricted and there was extensive dullness to percussion, reaching as high as the third rib; over this area the vocal resonance and vocal fremitus were reduced and respiratory murmur was absent at the base and greatly reduced at the higher levels of the zone of dullness. The heart was displaced to the right, but a Grocco's triangle was not demonstrable. Examination of the other systems revealed no abnormal features. The B.P. was 120/70. A skiagram taken on Aug. 28 showed evidence of a left-sided pleural effusion; no air was present in the pleural cavity. On Aug. 31 an exploratory puncture of the chest was performed and 10 c.cm. of what appeared to be pure blood was obtained. The haemoglobin content of this sanguineous fluid was found to be 65% (Sahli). The patient's progress was satisfactory, and serial examinations revealed signs of absorption of the fluid. A further *x*-ray examination of the chest on Sept. 13 showed a diminution in the size of the effusion, which was now seen to extend into the interlobar fissure. Thirty-three ounces (938 c.cm.) of blood-stained fluid was withdrawn on Sept. 20 and a further 16 oz. (454 c.cm.) on the 23rd.

The patient was discharged from hospital on Oct. 11. At that date a dull percussion note could be obtained only at the lowermost zone of the left chest, while the air entry seemed unimpaired. The radiological findings were then those of a residual opacity in the left costo-phrenic angle, which was considered to represent pleural thickening. The patient felt very well and was free of symptoms. During his stay in hospital the pulse and respiration rates and the temperature were raised, but the latter never reached above 100° F. Within three weeks they had settled to normal levels. Examination of the fluid originally withdrawn from the chest showed very numerous red cells and also endothelial, polymorph, and mononuclear cells; bacteriological culture was negative and no tubercle bacilli were found.

A month after his discharge from hospital the patient reported for re-examination, and the only abnormal sign in the chest was a slight impairment of the percussion note at the left lung base. Physical examination on July 27, 1945, revealed no evidence of abnormality in the chest, and a skiagram showed that the left lung field was now clear, only very slight pleural thickening being noted in the costo-phrenic angle.

Discussion

Blood in the pleural cavity may be associated with trauma, neoplasm, infarcation of the lung, tuberculosis, severe fevers, chronic nephritis, cirrhosis of the liver, and blood dyscrasias. Among other causes are rupture of an aneurysm of the thoracic aorta or other thoracic vessel, scurvy, caries of a rib, multiple telangiectasis of the pleura, and injury to a blood vessel in paracentesis, thoracoplasty, or other surgical procedure such as division of pleural adhesions. Chandler (1937) also refers to the very rare condition of recurrent and even bilateral haemothorax of unexplained aetiology known as pachypleuritis haemorrhagica. In the absence of an obvious cause haemorrhage into the pleural cavity is a rare event. The incidence of the so-called spontaneous variety, as judged from the literature, is very low, although this undoubtedly is an underestimation, since not all examples are reported. Frey (1935) was able to discover only 10 cases. Hartzell (1942) compiled a list of 40, the series including only those who had been personally examined and in whom tuberculosis could be excluded satisfactorily as a cause; he records three additional cases of his own. A striking feature has been the constancy of the age and sex incidence. All the subjects have been men, with the exception of one of the three cases reported by Hopkins (1937). The age of the patient was mentioned in 41 of the 43 cases, and in all but 5 it fell between 20 and 40 years. The examples cited by Davidson and Simpson (1940) and by Lea (1942) were both males 26 years of age, and the case of Almeyda (1943) a man aged 41. There does not appear to be a predilection for either side of the chest.

While spontaneous haemothorax does not owe its origin to an inflammatory process, the blood acts as an irritant to the serous membrane and a reactionary pleural exudate results. The pleural effusion thus evoked dilutes the blood and adds to the volume of intrapleural fluid. The studies of Sellors (1945) show that in six cases operated upon within a few hours of the injury producing the traumatic haemothorax, the haemoglobin level was 30 to 40% below that of the circulating blood. Further dilution of the haemorrhagic pleural fluid occurs, so that in some instances the haemoglobin content may be below 20% only four days after the injury. However, there appears to be much variation in the velocity of the fall of the haemoglobin values in different subjects. That the colour alone may give a false impression of its blood content is emphasized by Sellors (1945), since 5 to 10% haemoglobin content may yield an appearance of heavily blood-stained fluid.

Haemothorax must be distinguished from haemorrhagic pleural effusion and due consideration be paid to the lapse of time between the examination of the fluid and the onset of the condition. Obviously haemoglobin estimation is necessary. It is a well-established fact that blood maintains its fluid state while in the pleural cavity. Clotting does occur as in bleeding from other sites, but the haematoma is rapidly defibrinated by the agitation produced by cardiac and respiratory movements. Eosinophilia is often found in the intrapleural blood, which is of dark colour. The eosinophil cells have been considered to represent neutrophils which have engulfed haemoglobin, but this explanation has been denied by Grabfield (1921).

Tearing of a pleural adhesion in patients receiving therapeutic pneumothorax may result in haemothorax, but Korel (1936) points out the rarity of haemothorax in pulmonary tuberculosis considering the great frequency of large haemorrhages and of spontaneous pneumothorax in tuberculosis. He attributes this to the fact that the perforation involves the periphery of the lung, where the blood vessels are small, and to the poor vascularity of the tuberculous or emphysematous tissue which is the seat of the perforation. However, Mazzei and Pardal (1934) showed that subpleural bullae may be richly vascularized. They demonstrated a layer of newly formed vessels with abundant anastomoses which could give rise to large intrapleural haemorrhage. If this be the case, then it is all the more surprising that spontaneous pneumothorax is so rarely attended by the presence of any quantity of blood in the pleural cavity.

The commonest cause of spontaneous pneumothorax is the rupture of a valve vesicle situated on or near the pleural surface. The vesicle may be a manifestation of healed tuberculosis or of localized emphysema. Communication with neighbouring bronchioles by a valve-like mechanism allows the entry of air but hinders its exit, and thus the bulla increases in size and may finally rupture. When rupture does occur bleeding might be anticipated as a concomitant incident, and perhaps its absence depends on the immediate pulmonary collapse, which brings about a retraction of the injured blood vessels as well as slowing of the circulation through the lung. Korol (1936) points out the efficacy of artificial pneumothorax in the treatment of haemoptysis and considers that it is the latter factors which operate. Careful inspection of the skiagram of a case of spontaneous pneumothorax will often reveal a small amount of pleural fluid in the costo-phrenic angle.

It becomes apparent that some additional possible mechanisms must be sought to explain the origin of spontaneous haemo-

thorax. The view of most contributors to this subject is that a spontaneous pneumothorax is the initial event. As the intrapleural pressure rises any pleural adhesions which exist will become stretched and may ultimately rupture, so producing a spontaneous haemopneumothorax. The collapsing lung tears the adhesion which contains blood vessels and the escaping blood accumulates in the pleural cavity. Leopold and Lieberman (1935) at necropsy found pleural adhesions in almost 50% of all individuals above the age of 20, even after eliminating all cases with a history of acute or chronic pulmonary disease; in many cases these adhesions contain large blood vessels which carry an arterial pressure six times that of the pulmonary circuit. Examples are on record which clearly demonstrate a pneumothorax preceding the haemorrhage; Rist and Worms (1940) report a case in which signs of dry pneumothorax were followed 12 hours later by extravasation of blood. The second of the three examples observed by Hartzell (1942) was a youth of 17 years of age who developed a dry spontaneous pneumothorax. He was discharged from hospital with *x*-ray evidence of full lung re-expansion, but was readmitted nine months later on account of a spontaneous haemopneumothorax on the same side.

While the occurrence of spontaneous pneumothorax with subsequent tearing of an adhesion may be an adequate account of the course of events in some examples, a difficulty still presents itself in the understanding of why, considering the very common incidence of pleural adhesions and the not infrequent pneumothorax, whether spontaneous or induced, haemothorax is not more common. The resultant of the opposing forces of the intrapleural pressure and the elasticity or toughness of the adhesion will determine the issue. Should the former influence be ascendant, severance of the adhesion will ensure, the degree of haemorrhage varying with the vascularity of the adhesion and the haemostatic effects of the contracting tissues and intrapleural pressure.

Almeyda (1943) considers that spontaneous haemopneumothorax and spontaneous haemothorax are in all respects identical. This conclusion merits further attention. The absence of air has been attributed to the lapse of time before adequate investigation, but the interval may not be of sufficient duration to allow of complete absorption of the air, nor has the rate of absorption been studied under these circumstances. Yater and Rodis (1933) published the *x*-ray films of a case of spontaneous haemopneumothorax in which the pneumothorax was demonstrable only with the patient lying on the sound side. The amount of air need not be great, for if enclosed in a small confined space it may exert a high pressure and so produce rupture of an adhesion with subsequent bleeding. As a tentative alternative explanation of the absence of pneumothorax in haemothorax we suggest the possibility of spontaneous rupture of an adhesion. Adhesions vary greatly in their calibre, and a sudden muscular movement may rupture one of very small diameter. Should the rupture take place close to the parietal pleura bleeding will result, but no air will enter the space provided the layer overlying the lung remains intact; if the break in continuity occurs in a portion containing lung tissue then both air and blood will accumulate. Post-mortem examinations in most instances fail to reveal the source of bleeding, and it is not possible to determine whether the bleeding is parietal or pulmonary in origin. We put forward the view that the haemorrhage may originate either from spontaneous rupture of an adhesion or as a sequel to a pneumothorax. The bleeding secondary to a pneumothorax may come from the vessels in the ruptured vesicle or from an adhesion torn by the pressure of the intrapleural air. If such a contention prove valid then a distinction must be drawn between spontaneous haemothorax and spontaneous haemopneumothorax.

The cardinal symptoms of idiopathic haemothorax or haemopneumothorax are pain and breathlessness. Usually the patient previously has been in good health. The pain may be preceded by some exertion altering the intrapleural pressure, such as yawning, coughing, sneezing, or straining, or it may occur while the individual is at rest. Of particular importance in some instances is the location of the pain in the abdomen, and this has led on several occasions to the erroneous diagnosis of an acute abdominal emergency, especially when other symptoms of gastro-intestinal upset—nausea, vomiting, and diarrhoea—are present. The somewhat varied order of the appearance and progress of the pain and dyspnoea may theoretically be accounted for by a consideration of the possible sequences of events which may ensue. Should a spontaneous pneumothorax be the initial incident, acute pain will be experienced. Depending on the amount of air liberated into the pleural cavity, the degree of pulmonary collapse, and the rapidity with which these processes occur, dyspnoea may appear simultaneously with the pain or some time later, and its severity be measured by the encroachment upon the respiratory reserve and the cardiac embarrassment occasioned by the mediastinal displacement. If bleeding from the ruptured vesicle takes place at the same time, then dyspnoea will steadily increase to a fatal outcome or until the haemorrhage and the escape of air are controlled by artificial or natural means. The pneumothorax, if at first unaccompanied by haemorrhage, may be of insufficient degree to give rise to marked breathlessness, and pain may be the principal presenting symptom; then there may be a temporary improvement in the severity of the pain lasting for several hours to several days, only for a recurrence of the pain to ensue, but accompanied now by pronounced dyspnoea, signifying that this exacerbation represents the rupture of a pleural adhesion.

These three stages—pain (with or without dyspnoea, according to the size of the pneumothorax), temporary improvement, and recurrence of pain and dyspnoea with signs of internal haemorrhage—have been well marked in most of the recorded cases of spontaneous haemopneumothorax. When an adhesion ruptures spontaneously close to the parietal pleura and without any severance of the visceral pleural surface of the lung pain appears at once, with dyspnoea steadily increasing to its height, depending on the rapidity of the outpouring of blood from the ruptured vessels of the adhesion. This course of events closely resembles that succeeding the rupture and simultaneous bleeding of a pleural vesicle, the distinguishing feature being the presence of air in the pleural sac on the latter occasion. A breach in the continuity of the surface of the visceral pleura during the spontaneous rupture of an adhesion will yield a syndrome indistinguishable from the haemopneumothorax of a ruptured bleeding bulla.

Examination of the peripheral blood may reveal an anaemia commensurate with the degree of internal bleeding. Fischer's (1922) case shows how severe the latter may be, four and a half litres of blood being recovered from the pleural cavity.

The clinical course in most cases which survive the period of shock and sudden mediastinal displacement is that of slow and steady improvement. Jones and Gilbert (1936), in an analysis of 13 cases which eventually recovered, found that the average duration of the disease was 59 days, with the shortest period 10 days and the longest 98 days. Hartzell's (1942) review of 43 cases shows a fatal termination in approximately 1 in 3 cases. Of 11 cases in which the available data were satisfactory, 5 died within 24 hours, 4 within a week, and 2 at a still longer interval. Little information is available with regard to the incidence of second attacks, but the ultimate prognosis of recovery of respiratory efficiency appears to be satisfactory if adequate treatment is adopted. The patient reported by Milhorat (1937) enjoyed excellent health and freedom from all symptoms suggestive of pulmonary disease six and a half years after a spontaneous haemopneumothorax.

Summary

A case of spontaneous haemothorax is presented.

The possible mode of origin, the clinical features, and its relation to spontaneous haemopneumothorax are discussed.

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Medical Memoranda

Fatal Aortic-Oesophageal Fistula from a Swallowed Piece of Bone

The following case of aortic-oesophageal fistula arising from perforation of the oesophagus and aorta by a piece of bone may be of interest owing to the rarity of the condition.

CASE HISTORY

A young Somali adult was admitted to a casualty clearing station for treatment of a small tropical ulcer. The ulcer was given local treatment; the patient had no other complaints. At about 5 p.m. on Oct. 7 he had a normal meal of meat and vegetables. At midnight he complained of nausea and a slight deep-substernal discomfort, and a short time later brought up about a cupful of blood-stained vomit. At about 5 a.m. the next day he suddenly vomited 5 oz. (140 c.cm.) of bright-red blood containing several clots, in which was found a flat piece of bone. Apart from a slight rise in pulse his general condition was good and there seemed no cause for alarm. The piece of vomited bone had the appearance of a cortical portion of some long bone. It was flat and polygonal in shape, and measured 3 cm. in its greatest length and 1.5 cm. in its greatest breadth. The edges and corners were sharp, and one of the long edges was serrated like a saw. A diagnosis of laceration of the oesophagus was made.

Treatment and Progress.—Morphine 1/3 gr. (22 mg.) was given and other first-aid measures for haemorrhage were begun. His general condition improved rapidly; but a blood count at 9 a.m., showed haemoglobin 40% (Sahli) and 1,830,000 red blood corpuscles per c.mm. No oesophagoscope was available. At 12 noon he suddenly vomited about 20 oz. (560 c.cm.) of bright-red blood; much of it was clotted. He was collapsed, with all the signs and symptoms of severe haemorrhage. First-aid shock treatment was given and an intravenous drip of 500 c.cm. of serum was started, followed by 1,000 c.cm. of glucose-saline and later 500 c.cm. of matched blood. His general condition improved somewhat. In the hope of being able to plug the oesophagus from the stomach a laparotomy was performed. The stomach was found to be full of blood clot. There was no lesion of the stomach. A stream of blood was seen pouring from the oesophageal opening. No lesion of the oesophagus could be felt digitally. Closure was performed, and the patient died.

Post-mortem Examination.—The body was that of a well-built, well-nourished male, and, apart from marked pallor of the mucous membranes and a small ulcer on the right shin, there was no evidence of external disease or injury. The pharynx showed no abnormality. On opening the oesophagus it was found to contain a large quantity of blood. On the antero-lateral wall on the left side, 9.5 cm. from the commencement of the oesophagus, there was an area 2 cm. long by 1.5 cm. broad which suggested that a cut had been made by a blunt knife. The mucosa was cut fairly cleanly over this area, but the muscle layers had a slightly shaggy appearance. On passing a probe into the centre of the cut it was found to emerge in the arch of the aorta 1 cm. below the origin of the left subclavian artery. The opening into the aorta was a small irregularly shaped hole about 1 mm. long, and had some blood clot lying at its edges. There was also a cut in the posterior wall of the oesophagus about 9 cm. from the origin of that organ. This cut area was 2 cm. long by 1 cm. broad. Again the muscle coat had been severed, but the wall was not perforated.

No other abnormality of the oesophagus was found. The remainder of the alimentary system showed no abnormality; and no pathological changes apart from the perforation of the aorta could be discovered in the heart or great vessels or any other organs.

The literature of the subject has been reviewed by Bank. R. S., *J. Amer. med. Ass.*, 1943, **122**, 1011.

We are indebted to D.M.S., East Africa Command, for permission to publish this article.

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Dr. Willard C. Rappleye, president of the Josiah Macy Jr. Foundation, New York, announces that more than five million copies of over four hundred leading medical and scientific articles have been published by the Foundation's war reprint service during the last three years for medical officers of the armed Forces of the United States and so far as possible Canada, England, New Zealand, Australia, the U.S.S.R., and China. The reprint service is now discontinued. It has been an effort to bring new and important developments in the science and practice of medicine to medical officers who were largely cut off from the sources of medical information during the war. In the choice of these articles the Foundation has had the active co-operation of the Committee on Pathology of the National Research Council and of the National Committee for Mental Hygiene.

Reviews

MOVEMENT OF EXTRAVASCULAR FLUID IN THE LUNGS

Pulmonary Edema and Inflammation. An Analysis of Processes Involved in the Formation and Removal of Pulmonary Transudates and Exudates. By Cecil K. Drinker, M.D., D.Sc. Harvard University Monograph in Medicine and Public Health. No. 7. (Pp. 106; illustrated. $2.50 or 14s.). Massachusetts: Harvard University Press; London: Oxford University Press. 1945.

An outcome of recent work, employing isotopes, on the distribution of ions throughout the body and of estimations of the volumes of the fluid compartments of the organism by a variety of methods has been the appreciation of the rapidity with which transport and distribution of substances is effected across the various membrane barriers.

In this short monograph, which contains the substance of the Nathalie Gray Bernard lectures, Prof. Drinker deals with the movement of extravascular fluid in the lungs. He regards the formation and circulation of lymph in the lungs, and the production and removal of alveolar transudates and pleural effusions, as parts of one large problem. The factors affecting fluid exchange, while similar to those operating in other tissues, are modified by the mechanical conditions under which the lungs work. The minute anatomy of the lungs is first reviewed, and then follows a description of the experimental methods by which the lymph from the lungs can be collected. The salient differences, often disregarded, between the systemic and the pulmonary capillaries are examined particularly with reference to the pressure relationships of the blood vessels, air passages, and lung tissue. The factors which may disturb the normal balance between the rate of tissue fluid formation and lymph drainage are discussed and, by reference to his own experimental work, the influence of anoxia on capillary permeability is stressed. From observations, both clinical and experimental, it is concluded that limitation of lung movement, slight respiratory obstruction, or anoxia produced in any way, may give rise to a degree of pulmonary oedema which, while insufficient to be revealed by ordinary clinical examination, may encroach upon the pulmonary reserve, prevent the free exchange of pulmonary gases, and provide conditions suitable for the spread of infectious inflammation. In a concluding chapter present methods of artificial respiration are reviewed, not only for their effect on ventilation but also for the changes likely to be produced in the lungs by the particular method employed.

Although the problems raised are not new and the consideration given to them is necessarily rather superficial, yet the approach to them is stimulating, as may be anticipated when the way is by the author's own investigations, and the majority of them are of fundamental importance to the physician, the anaesthetist, and the thoracic surgeon.

HISTORY OF SCIENCE

Science Past and Present. By F. Sherwood Taylor, Ph.D. (Pp. 270; illustrated. 10s. 6d.) London: Heinemann. 1945.

Dr. Sherwood Taylor has had the excellent idea of putting together a history of science which is also a "source book." Each of his eighteen chapters—beginning with man's first efforts to make flints, and ending (inevitably) with the atomic bomb—is followed by a series of quotations from contemporary writers which, in their cinematographic effect, give a livelier impression of the knowledge and outlook of successive generations of inquirers than can be obtained from much more ambitious histories. His chapter on "The Revival of Observation"—the sixteenth century—provides a good illustration of the method. The main text compresses into a matter of eight pages a general sketch of the Renaissance and a sufficient survey of the science of the period to establish the point that astronomy and anatomy were the only branches in which outstanding advance was being made. Then we come to the quotations: Copernicus's explanation of how he "began to think about the mobility of the earth"; Vesalius's demonstration in a sow of "the connexion of the voice with the recurrent nerves" ("This animal is chosen because it can be relied on to squeal continuously and so provide the voice which is the subject of the experiment"); a typical prescription, from Fumanelli,

compounded of filtered lizards, marjoram, and wormwood; Edward Wright's story of "an ancient mariner (yet living I think) who having undertaken the charge of conducting a ship from England to St. Michael's (the easternmost of the Azores) and after long seeking not able to find it, for shame and sorrow cast himself overboard"; and, finally, the elaborate directions of Robert Recorde in 1542 on how to multiply "seven times eight," given that "five times five" is the limit of tables that one can be expected to know. In the same short chapter there are ten illustrations, all aptly chosen, from original sources. Primarily written for sixth-form and university students, this is a book which few can afford to despise.

A MEDICAL TRACT

Birthright. By Eustace Cluver. (Pp. 165. 8s. 6d.) Johannesburg: Central News Agency, Ltd. 1945.

This is a mixture of something like a fairy story with ardent propaganda for a whole-time salaried medical service. The author is an enthusiastic advocate of prevention rather than cure, and like most such, his interest is in the mass rather than in the individual whose eccentricities, likes and dislikes, are of small account in comparison. It is probably fair to infer that the author is the eminent Director of the South African Institute for Medical Research, whose views are therefore worthy of respect.

The fairy-story element is provided by a running account, first of what the world was like in the days of our very remote ancestors, and then by the experiences of a "Dr. Fortescue,' a general practitioner who arrives at a strong belief in the necessity for a State Medical Service and discusses the matter with his patients and his colleagues. Man's birthright is his right to be healthy, happy, and contented, and to live to a much greater age than at present seems possible. This can be achieved only by planning, and the author believes that Russia is doing this now. Dr. Cluver says that, though the medical profession has its ideals, these "can never be realized until disease treatment ceases to be profitable. The profession as a whole is not making the contribution to the health of the community commensurate with its numbers; it is far too much concerned with treatment and too little with prevention." The present low average of physical health is attributed to the evils of civilization—starchy foods, too much clothing, lack of ventilation, economic insecurity; and on these points much of what the author has to say is interesting and sometimes very sound. There are many passages which the reviewer found provocative, and one at least that seemed quite out of place in a book which must have been intended to be persuasive. There is a long argument about a salaried medical service, conducted with great spirit during an operation which ends in the death of the patient owing to the mismanagement of the anaesthetist, who, of course, is arguing in favour of private practice, while the surgeon takes the other side. The jury brings in a verdict of accidental death, but it was probably not aware of the absorbing controversial activities of the two doctors concerned.

The account of his visit to Russia in 1939, and the effect it had on the doctor, is well told. It conveyed to one reader the impression of a man all too willing to be confirmed in ideals previously formed, and now, he thought, put into practice. At first the doctor was rather depressed by the drabness and shabbiness of the man and woman in the street and by the marked lack of enthusiasm shown by those concerned in running the hotel at which he stayed in Moscow. However, it was explained to him that waiters are generally chosen for the job because they have proved useless for other more useful occupations. But as soon as he got into the institutions dealing with the masses he was enchanted. He admits that he encountered much dirt and overcrowding (not in the institutions) and saw much evidence of the results of early malnourishment, but, he goes on to say, "the health plan as I saw it approaches perfection," and he shows very clearly that in many directions the Russians have made immense progress, particularly in maternity and child welfare, in industrial medicine, and in the reduction of prostitution and venereal diseases. Dealing with the medical profession, he says that in the selection of students preference is given to manual workers, which accounts for the lack of preliminary general education which he noted. Students are paid salaries and allowances during their curriculum. When a doctor qualifies he must go where he is sent, but there is little reluctance (which anyhow would not be tolerated) about going to remote areas, because the salaries are higher there and the cost of living less. An "experienced doctor" would be paid the equivalent of £40 a month; which is deemed good pay, as it is "as much as is earned by the most skilled worker," such as the miner. Traces of the "old Adam" appear when we are told that in rare cases higher salaries can be earned, even as much as £160 a month. This is achieved by giving a doctor four *whole-time* appointments. The author comments frequently on the great disproportion between men and women doctors: the women seem to be in a great majority. Russia discourages domiciliary attendances, and the author admits that it is "quite impossible to attain to the close personal relationship implicit in private practice." But as most of the people have never experienced this they don't mind, and Dr. Cluver obviously thinks it of little consequence when it is compared with the benefits the Russian system has conferred on the mass. A non-Russian patient might have other views.

Space does not allow of reference to many other interesting points noted by an acute if biased observer. The author's idealism appears occasionally to overcome his sense of proportion. Optimism runs riot through the story. "In the not too distant future we shall have cured the last case of infectious disease of any kind." "Clinical diagnosis has become supererogatory. The drugs available are so general in their action that it is no longer necessary to label the disease which is about to develop." "The doctor of the future will have the job of keeping lots of healthy old men and women in their contentedly happy state." We can envy Dr. Cluver his optimism even if some of us are not able to share it.

Notes on Books

The Ministry of War Transport has issued from Berkeley Square House, London, W.1, two revised memoranda on *Malaria among Merchant Seamen*, which supersede earlier editions. The first and longer, officially described as Notice No. M. 195, gives suggestions for the prevention, diagnosis, and treatment by ship surgeons of malaria on ships. It describes general and medical precautions, clinical manifestations of malaria, diagnosis and prognosis, general management of a case, and specific treatment of an acute attack. One appendix is on the technique of parenteral administration of antimalarial drugs, and another on toxicity of mepacrine and pamaquin. The second and shorter memorandum, Notice No. M. 178, is primarily intended for the use of masters of vessels that do not carry surgeons, and the instructions are confined to such measures of prevention and treatment as can be carried out by the layman.

The Junior Club Handbook: a Guide to the Organization of Clubs for the Under 14's is published at 3s. 6d. by the Religious Education Press, Wallington. During the war, owing to the absence of parents on war work and the temporary decay of scout and guide activities due to lack of leaders, the leisure of school-children was poorly provided for and organized. Probably this was one of the major causes for the increase in juvenile delinquency in recent years. Attempts have been made to form clubs for these school-children by many well-intentioned individuals and organizations, but they have been by no means uniformly successful. In 1943 a committee was formed and made a survey of three representative boroughs, and was dissatisfied with what it found. Learning from the mistakes it discovered, the majority of its members have contributed articles dealing with their respective spheres of interest to make up the present guide to the formation of junior clubs. Play, the use of the arts, outdoor activities, and religion are discussed seriatim in the first part, and details of games, dancing, and handicrafts are supplied in the second. A useful bibliography and list of addresses is appended, but it is regrettable to find no mention of child guidance, which has an important contribution to make towards the understanding and upbringing of normal as well as abnormal children. On the whole this little book provides useful suggestions for all who take a practical interest in our citizens of the future.

Dr. MARIE-LOUISE VERRIER'S *Biologie de la Vision* (Paris: Librairie Armand Colin; 42 francs) is essentially an account of the comparative physiology of the eye. It also gives a considerable amount of incidental comparative anatomy. As a concise elementary exposition it leaves little to be desired. The excessive stress on French work is rather unfortunate.

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SPRUE

It is not unusual for anthropologists to lament that so little information was gathered about the structure and customs of primitive communities when the white races first penetrated into Africa and the Pacific. We must sometimes wonder, therefore, whether scientists of the future may not look back on the war-stricken decades of the first half of the twentieth century as the golden opportunity for nutritional research. The answer is almost certainly No. The poorly nourished are likely to be with us for many years to come, and, though war subjects mankind to strange and testing circumstances, it does so under conditions which are not devised for dispassionate observation or control. In this war the experiment has been made of sending huge armies of men with the latest equipment of technology into India, South-East Asia, and the Pacific. The scope of the attack was without parallel in the history of warfare, and its success was largely due to applied science. The amount of new knowledge gained in the field has nevertheless been relatively small, owing to the basic difficulty under which both military medicine and tropical medicine labour—that is, to bring together the clinical material and the facilities for investigation, and to reconcile the urgent tempo of war with the measured pace of research. Moreover, while war accelerates the application of science, it probably retards the development of fundamental knowledge.

One of the problems of military medicine in India has been sprue, of which Keele and Bound give an account in the opening pages of this week's *Journal*. It is important not so much for the total number of cases as because of the long duration of invalidity and the obscurity of the pathology. The interest of these war cases is that the patients have been seen at a stage before the development of anaemia and complications. They have, in fact, been seen so early that they raise the question as to the essential features on which a diagnosis of sprue should be based. Keele and Bound found that isolated samples of stools from their patients might contain a normal percentage of fat; but analysis of single specimens is of little value, as Frazer and his colleagues pointed out at a recent meeting of the Gastro-Enterological Society. The only way to determine the presence of steatorrhoea is to carry out an actual fat balance, in which the patient is given a measured intake of fat over a period of days, and the amount not absorbed is estimated by collection and analysis of all the faeces passed. We should be unwilling to abandon steatorrhoea as the cardinal symptom of sprue without the evidence of such experiments.

The designation "sprue" was given to the illness because of the *aphthae tropicae* with which the patient's mouth is sprinkled, while the synonym "psilosis" refers to the bald tongue. There can be no doubt that sore mouth and catarrhal inflammation of the entire alimentary tract formed the basis of the classical description of sprue. There are, however, other tropical diseases in which sore mouth, diarrhoea, and wasting occur, such as pellagra, kwashiorkor or malignant malnutrition, and ariboflavinosis. The distinction between sprue in the white troops and marasmus in the coloured troops in the Burma campaign is so fine that one would doubt whether it could really be drawn by clinical means. If we are to make further advances in the understanding of nutritional disease we must discover objective criteria for classification, comparable with the bacteriological and serological criteria of infectious diseases. These may be found by the isolation of aetiological factors and the recognition of specific disturbances of form and function. The tendency in recent years, therefore, has been to rely rather more on the laboratory data than on the clinical signs, and steatorrhoea has been the criterion by which sprue has been separated from similar conditions such as pellagra and nutritional macrocytic anaemia in cases of doubt. It may be that steatorrhoea will prove to have as many different origins as stomatitis and diarrhoea, and to be a phase and not a primary symptom of the illness we call sprue. Nevertheless, for the moment it would seem profitable to regard steatorrhoea as an essential element in diagnosis and research on sprue.

If sprue is so difficult to define it is not surprising that its aetiology remains a puzzle. Sprue occurs in America, Asia, and Australia, but apparently not in Africa. It sometimes appears in epidemic form, and may be so localized as to give rise to the idea of "sprue houses." It affects the more prosperous section of the community. There is a pronounced seasonal variation in incidence. All this is difficult to harmonize with the conception of a nutritional deficiency, but efforts to discover a specific infective agent have failed. In a review of the aetiology of sprue A. W. D. Leishman[1] suggests that micro-organisms may be playing a different part from that with which we are familiar in the infectious diseases. It has been known for some time that though pellagra is associated with deficiency of nicotinic acid it predominantly affects the maize-eating peoples of the world. It is now believed that a maize diet is unfavourable to the absorption of nicotinic acid, whereas biological proteins and tryptophane are favourable. The action in both directions is believed to be brought about by the changes in the intestinal flora which result from the different diets. In sprue Leishman suggests that a change in the intestinal flora consequent on residence in the Tropics depresses the absorption of nutritional principles which are concerned with the assimilation of fat. This is an interesting speculation, which suggests that the conception of intestinal toxaemia may be revived in a new guise, but it will be impossible to prove or disprove it until we know more about the absorption of fat. A further problem raised by these war experiences is why sprue is

[1] *Lancet*, 1945, **2**, 813.

on the whole curable, while the idiopathic steatorrhoea seen in this country tends to persist throughout life. The conclusion we would draw is that advances in the prevention and treatment of sprue must wait on basic physiological studies. The new hypothesis of fat absorption advanced by Frazer[2] and his colleagues promises to be very fruitful, and it may well be that the problems of sprue will be solved in the laboratories of Western Europe and the U.S.A. rather than in the countries where the disease is prevalent.

INFECTIOUS DISEASES IN THE LENT TERM

The trend of infectious diseases during the war years has shown no very marked deviations from the average, though the returns for the last two years suggest that infectious diseases in general were less prevalent than in the earlier war years. Only two diseases—diphtheria and dysentery—have undergone a notable change in incidence and their trends have been in opposite directions. The notifications of diphtheria numbered 25,059 in 1945; this was a record low level, being only half of the number recorded in the early war years. Dysentery has steadily and rapidly increased during the war, and the 16,533 notifications in 1945 were six times greater than the total for 1940. Most infectious diseases have a distinct seasonal rise, with a heightened incidence in the winter months and often with a maximum during the first quarter of the year. The most outstanding disease for its regularity of appearance and shape of the epidemic curve is influenza. The annual trend of influenza since the pandemic of 1918–19 has been to increase slowly in the late autumn, with a more rapid rise in late December or early January to a maximum in the early weeks of the year. In recent years the peak of the mortality of the great towns has varied from the fourth to the eighth week. The only exception to the customary influenza pattern occurred in the winter of 1943–4, when influenza began to rise about two months earlier than usual and the mortality in the great towns reached a maximum during the 49th week of 1943. An outbreak of influenza has usually spent its force by the end of the first quarter, but in years of unusual severity the epidemic may last well into the second quarter. During the large epidemic of 1929 the deaths in the great towns reached a maximum of 2,183 in the ninth week, but it was not until the week ending May 11 that fewer than 100 deaths were recorded weekly. The deaths from influenza in the last weeks of 1945 were above the average, but it does not necessarily follow that the present outbreak will exceed those of recent years, though it does seem a likely occurrence.

The common infectious diseases of childhood are more prevalent in the winter; but for scarlet fever, whooping-cough, and diphtheria there is no very definite maximum: the incidence oscillates around a high winter level. The notifications in the first quarter are higher than in the preceding fourth quarter for whooping-cough, while the reverse is true of diphtheria. In the first quarter of 1945 the incidence of diphtheria fell instead of remaining almost at the level of the preceding quarter, as would have been expected from the experience of the preceding years. Any hopes that a large continuous fall in the incidence of diphtheria had been achieved were disappointed later in the year, when the figure reverted to the level of 1944. If the present trend of diphtheria goes on we must expect a considerable increase in notifications during the Lent term compared with last year, though the number of cases should be below the 9,005 recorded in the first quarter of 1944. Measles has been a notifiable disease only since the war began, and during this period it has exhibited a biennial periodicity with maxima in the first quarters of 1941, 1943, and 1945, the largest weekly totals occurring in the 1st, 8th, and 12th weeks. In the coming quarter we may expect measles to rise, and judging from the past six years the incidence will continue to rise until a maximum is reached in the spring of 1947. As in 1914 the outbreak of war, with the consequent massing of great numbers of men, was followed by a large outbreak of cerebrospinal fever. Before 1939 the incidence rose in winter to about twice the summer level, but without any definite peak. Since 1939 a rise to a pronounced maximum in the first quarter of the year has been a feature of the incidence of cerebrospinal fever, the peak incidence appearing from the 6th to 12th week. In each succeeding annual wave the number of cases has declined: the successive maxima were 617, 406, 281, 121, 101, 94. Cerebrospinal fever seems to have become temporarily stabilized at about twice the pre-war level, and the coming spring will probably show figures of the order of those of the past two years, since the autumn trends of these years are similar.

Acute pneumonia displays somewhat the same trend as the influenza mortality of the great towns. The winter rise of pneumonia starts earlier than the rise in influenza mortality, and although, generally, the number of cases recorded in the first quarter is much greater than the number in the preceding fourth quarter there is no sharp rise to a maximum in the first quarter; rather the incidence tends to remain at a high level for some weeks. The only recent exception to the general trend of pneumonia occurred in 1943–4, when the maximum was reached in the 49th week; this coincided with the maximum of the influenza outbreak, which was exceptional for time of occurrence. Since in recent weeks acute pneumonia has been at a higher level than in the corresponding period of last year the notifications in the forthcoming quarter will probably be more numerous than in the first quarter of 1945. Dysentery displays no seasonal trend, and this might be expected because of the localized area of outbreak; but the disease has shown a large and continuous rise throughout the war: 4,681 cases of dysentery were notified in the first quarter of 1945, and compared with some pre-war years the notifications have multiplied over twelve times. Of the non-notifiable infectious diseases rubella, which may sometimes in a closed community exhibit powers of spread equal to influenza, appears in the first and second quarters in epidemic form, and attack rates of over 90% among the susceptibles in the population (i.e., those not previously attacked) have been recorded. It would seem from field investigations that chicken-pox has not a well-marked seasonal rise and that it emerges

[2] *J. Physiol.*, 1944, **103**, 306.

in a closed community of boys and girls more frequently than any other infectious disease, though numerically it is not the most important. The work of many epidemiologists has established that the Lent term has the largest prevalence of nasopharyngeal infections. Both in this country and in America a maximum incidence has been found at about the end of the first month of the quarter.

JUVENILE DELINQUENCY AND ITS REMEDY

The recent debate in the House of Commons shows that the problem of juvenile delinquency arouses great concern but not much constructive thought. Mr. F. W. Skinnard, M.P., who is an expert on the maladjusted child, has put the problem into perspective in an article which stands out as one of the most sensible written on this subject for a long time.[1] His chief point, and one that ought never to be forgotten when thinking about juvenile delinquency, is its fundamental difference from adult crime. If the child charged with an indictable offence is the embryo of the habitual adult offender, and if juvenile delinquency is constantly increasing, then the adult convict population should be growing. In fact, as Mr. Skinnard points out, serious adult crime is decreasing; the vast majority of adult criminals have no police record as children, and a very small percentage of children brought before the courts ever appear again. That juvenile delinquency has increased seems to be generally accepted, but the amount of its increase is largely a matter of statistical recording. After the passage of every Act concerning delinquency the recorded figures shoot up. Sir William Clarke Hall declared that the number of child offenders in any locality can at any time be multiplied merely by exceptional police activity. The principal cause of child delinquency is the failure of the community to give children something sensible to do. The child will not allow his valuable instincts and talents to rust, even if the only uses to which he can put them are illegitimate. He is not content, as grown-ups are, with repetitive work and canned amusements. The community has remained strangely passive to the vital need of providing a creative outlet for youth. Its interest is manifested mainly in administrative and permissive measures sweetened by grants in aid; there is no comprehensive plan. It is concerned with the activities of adolescents only when they break the law. Mr. Skinnard sketches from practical experience the lines which reform should follow. First, he says, all the work of the school should tend outwardly towards the community at large, so that there is a conscious integration. Secondly, the school should aim at attracting inwards the interest and active attention of the adult population. The whole curriculum should aim at turning out young citizens with a real concern for the well-being of their district. He narrates how the work of drawing up a simple social and economic survey of the locality transformed a group of young delinquents into a keen self-governing body, and also produced an amazing reaction in the world around it. Previously hostile parents gave valuable help; adult classes were formed; local firms contributed equipment and demanded intelligent "leavers" to train for executive posts. Petty crime became nearly extinct. Mr. Skinnard concludes that if the youth of the world are taken into full partnership and given tasks worthy of their courage and matched with their ability they will help to build the only true democracy, based on a unity of spirit in a diversity of minds.

[1] *The World's Children*, Jan., 1946, 20, Gordon Square, W.C. 6d.

ARSENIC IN TOBACCO SMOKE

In 1927 Remington[1] drew attention to the fact that tobacco smoke was an unsuspected source of arsenic in the human environment, and made some experiments which showed that about half of this arsenic was volatilized when the tobacco was smoked. Further observations were made in 1934 by Gross and Nelson,[2] who found that between 15% and 40% went into the smoke while the rest remained in the ash and cigarette-ends. Last year Thomas and Collier,[3] of Salt Lake City, carried out smoking experiments with cigarettes, cigars, and pipe tobacco, and made determinations of the arsenic content of the puffed smoke, the unpuffed smoke, the ash, and the cigarette- and cigar-ends; they controlled the experiment both by estimating the arsenic content of small portions of the cigarette smoke and by analysis of whole cigarettes from the same packet. These observations revealed that different brands of tobacco and also individual cigarettes and cigars of a given brand varied widely in arsenic content: one packet, for instance, gave values ranging from 35.4 to 61.4 parts per million of arsenious oxide, while another gave values between 61.4 and 114.0 p.p.m. The smoke from these cigarettes contained between 11% and 23% of the arsenic, while the rest was distributed between the ash and the ends. The concentration of arsenious oxide per cubic metre of the puffed smoke ranged from 0.2 to 3.0 mg. for cigars (which, however, contained less arsenic than the cigarettes or smoking tobacco), 1.7 to 5.7 mg. for pipe tobacco, and 3.3 to 10.5 mg. for cigarettes.

These observations are of interest because of their possible relation to carcinoma of the lung. Last year the Chief Inspector of Factories[4] stated in his annual report that three similar cases of pulmonary carcinoma occurring in arsenical sheep-dip workers had been notified since 1939. He also drew attention to the high incidence of carcinoma of the lung in arsenic workers, and stated that in conjunction with the Medical Research Council investigations were being carried out on this problem. Although the matter is not finally settled, there is strong evidence that exposure to arsenic dust predisposes to carcinoma of the respiratory tract. Much attention has been paid to the carcinoma of lung which occurs in miners in the Schneeberg mines in Czechoslovakia. The dust produced in the drilling of the hard rock is radio-active, and the neoplastic change has been generally attributed to this; the dust, however, also contains 0.45% of arsenic, which may play some part in the aetiology of the disease. The nickel and copper ores from the Sudbury mines in Canada also contain arsenic, which may account for the carcinoma which sometimes develops in the upper respiratory tract of workers who handle this material.

Most observers agree that there has been a general increase in the incidence of carcinoma of the lung during the past two decades, though it has been suggested that the increase is not real but the result largely of more accurate diagnosis and a longer-lived population. During the same period there has been an enormous increase in the consumption of tobacco. Now that tobacco smoke is known to contain a substance having carcinogenic properties when introduced into the respiratory tract, the question immediately arises whether the two increases are in any way related. There is at least a case for full investigation.

[1] *J. Amer. chem. Soc.*, 1927, **49**, 1410.
[2] *Amer. J. publ. Hlth.*, 1934, **24**, 36.
[3] *J. industr. Hyg.*, 1945, **27**, 201.
[4] Annual Report of the Chief Inspector of Factories for the year 1943. Ministry of Labour and National Service. Cmd. 6563. H.M.S.O., 1944.

JITTERY LEGS

Pain, aching, discomfort, or dysaesthesiae of a burning, tingling, "pins and needles" character are all symptoms which may affect the feet and legs with such severity or persistence as to drive the victim to seek medical advice. In such circumstances differential diagnosis may be difficult, especially if there is a lack of objective abnormality on examination. Largely by exclusion, the search narrows to a scrutiny of the peripheral nerves, the crural blood vessels, and the muscles, with such possibilities in mind as sensory neuritis, an early thrombo-angiitis, or a non-articular rheumatism. But as a rule a wholly satisfactory explanation of the symptoms does not emerge. K. A. Ekbom[1] has described recently a syndrome which corresponds with the more vague and elusive of these clinical phenomena. The complete picture, as he draws it, comprises peculiar and characteristic paraesthesiae in the lower legs, especially at night; weakness or clumsiness of the legs while walking, and a sensation of cold in the legs or feet. Objective signs are not to be found. Ekbom regards this disorder as "unpleasant, of long duration, and rather common." At the time of writing his paper the author had studied 8 cases, but by the time of correcting the proof-sheets the series had grown to 30. By the following year his material comprised 34 severe and 120 mild cases, and was incorporated within a short monograph.[2]

The symptoms may be examined in greater detail. The paraesthesiae ("dysaesthesiae" is a better term) are not easy for the patient to describe accurately. They are located deep in the leg, in the calf or shin; rarely in the feet; occasionally in the thighs. It is a crawling sensation, "irritating and enervating." All agree that it is something very unpleasant. Although often described in terms of "nervousness" the victims disclaim any association with feelings of an anxiety. The dysaesthesiae mostly come on at night, an hour or so after getting into bed. They prevent sleep. Since the sensations are relieved by moving the legs, the patient is compelled continually to change his position, and to kick, turn, and fidget in bed, or even to dangle the legs over the edge. Some indeed have to walk about the house. The dysaesthesiae may continue until the early hours of the morning. Two of Ekbom's patients used to pass the night reading or sewing. This state of affairs may continue night after night for years, even decades. During the day the legs are usually comfortable, though sometimes the dysaesthesiae will appear towards the evening when the legs are still—as in the cinema. The weakness of the legs is a less constant feature, and it consists of a vague feeling of heaviness or tiredness, especially after a long walk. It may cause the patient to stumble; it may seem as though the legs were going to give way; in one of the author's series they actually did crumple up on many occasions. Coldness of the feet and legs is the third symptom, though not always present. No constant abnormal signs can be demonstrated. Weakness and ataxy are absent, and reflexes and sensation are normal. Objective coldness of the legs, or discoloration, cannot be found. Pulsation in the dorsalis pedis arteries is normal. Oscillometric examination was done in one case and proved normal. The blood pressure was raised in some, but not in all. One woman had varicose veins in her legs. The Wassermann reaction was negative in all cases in which this test was done. A familial occurrence is not rare. Severe cases were commoner in females, and there was an association in some cases with pregnancy.

A search of the literature brought to light a condition described in 1861 by T. Wittmaack[3] under the term "anxietas tibiarum"—"a singular but an appropriate name, for it is really as though a restless spirit had flown into the legs of the patients. They change the position of the limbs every moment." R. Bing[4] also mentioned this affection in 1913—"a dull feeling, difficult to define, in the shin bones" . . . "my legs become panic-stricken." F. G. Allison[5] has recently written of a condition he called "leg jitters" which reads very like Ekbom's syndrome.

For the complete syndrome (anxietas tibiarum, weakness, and coldness of the legs) Ekbom suggested the term "asthenia crurum paraesthetica," or "irritable legs." Later he preferred the term "restless legs." In his later paper he also described a painful variety he called "asthenia crurum dolorosa." This picture is less clear-cut and less commonly encountered. He draws an analogy between the paraesthetic variety and the so-called acroparaesthesia of the hands so common in middle-aged women, but nevertheless believes that the two are distinct. He also refers, in discussing differential diagnosis, to the *acromélalgie nocturne* of J. Tinsel[6] (syn.: *causalgie nocturne spontanée des vieillards*; or *pseudo-erythromelalgia* of W. Craig and B. Horton[7]). Here there is a burning sensation in the feet which occurs at night and which causes the patient—usually an elderly man—to toss and turn, or expose the feet to the cold night air, or to tramp the bedroom. This syndrome, too, is a thing apart. It is suggested by the author that the condition of "restless legs" is due to a functional disorder of the peripheral circulation, but it is not clear what he has in mind in his use of the term "functional."

In 23 out of the 29 cases rapid and striking improvement followed the use of benzylimidazoline hydrochloride in the dosage of one tablet of 0.025 g. by mouth thrice daily; or the oral administration of carbaminoylcholine chloride—4 tablets of 0.002 g. a day. One case responded to injections of acetylcholine. Allison found benefit from chewing a tabella of nitroglycerin gr. 1/100 (0.65 mg.).

It is probable that this condition is by no means uncommon, but that it rarely reaches the attention of a medical practitioner and scarcely ever receives a mention in the literature. Its close association with disturbed sleep raises the question as to which is causal—i.e., whether an organic vasomotor affection of the legs interferes with sleep, or whether, on the other hand, a condition of psychogenic insomnia brings in its train various symptoms as somatic expressions of tension, irritability, anxiety, or fatigue. The association with states of anxiety and overwork certainly needs closer scrutiny. From a mere physical approach there is some suggestive evidence of an association with states of recurrent fibrositis on the one hand, and with migraine on the other. As regards treatment, it is noteworthy that sedatives of the barbiturate class are helpful, while even more efficacious is the nocturnal administration of aspirin gr. 10–15 (0.65–1 g.). Relief is also obtained from the wearing of heavy wool night-stockings.

The Air Ministry announces that Air Vice-Marshal A. Grant has been appointed Director-General of R.A.F. Medical Services from March 1, in succession to Air Marshal Sir Harold Whittingham, who relinquishes the post on Feb. 28.

[1] *Acta med. scand.*, 1944, **118**, 197.
[2] Ibid., 1945, *Suppl.* **158**.
[3] *Pathologie u. Therapie der Sensibilität-Neurosen*, Leipzig, 1861, p. 459.
[4] *Lehrbuch der Nervenkrankheiten*, Berlin, 1913, p. 522.
[5] *Canad. med. Ass. J.*, 1943, **48**, 36.
[6] *Le système nerveux végétatif*, Paris, 1937, p. 628.
[7] *Surg. clin. N. Amer.*, 1938, **18**, 899.

The Council of the British Institute of Radiology has made the 1945 Roentgen Award jointly to Mr. W. J. Meredith, of the Christie Hospital and Holt Radium Institute, Manchester, and Mr. G. J. Neary, of Mount Vernon Hospital and the Radium Institute, Northwood, Middlesex, for a paper done in collaboration and for other papers contributed by them separately to the *British Journal of Radiology*.

WITH THE PARTISANS IN ALBANIA

BY

Major J. G. DUMOULIN, R.A.M.C.

Albania, small and most backward country in Europe, is now free of Fascist tyranny. Sixty per cent. of its 1,250,000 inhabitants live in feudal communities in mountainous areas capable of independent existence when isolated in winter months. Doctors are few, and folk-lore handed down from father to son is the chief guide to medical treatment.

Cupping was the most popular general treatment of all ills. Sometimes this was combined with bleeding, when many small incisions were made over the area before the cups were applied; a sick person with as many as twenty red or bronze circular patches on back and chest was a common sight. Racki, a distillate of fermented grapes possessed by every household, was poured on sores, rubbed into the skin, or drunk as a cure for sick man and beast. One of the more insanitary but popular forms of treatment, more especially for chest conditions, was to apply to the body in the form of a jacket the warm skin of a newly killed goat or sheep on top of which were worn four or five layers of clothing. The sick man would be so left for several weeks. It was pitiful to see whitlows three weeks old, which had received no treatment except the daily application of wet leek leaves. An original idea was provided by a keen guerilla fighter whose friend received a through-and-through wound of the chest. He found his "puli-through" with a piece of "four-by-two" handy, if unorthodox, for use for first-aid treatment. The practices of heating stones and hanging them round the neck in a bag, of incising the lower lip for diphtheria, and even of charming away pains are just examples of the backwardness of these people of the mountains.

The Italians during their four years of occupation built some modern hospitals in the bigger towns, which had good equipment if they escaped from the ruthless pillaging and destruction carried out by the Germans as they left the country. During recent years most of the 150 doctors in the country had lived in the towns occupied by German garrisons. These men were Albanians and Italians who received their medical training in Italy, France, or Greece: while some were learned, many were not well versed in modern forms of treatment. Their methods include the popular view that injections have a greater curative power than pills, while cardiotonics, haemostatics, and calcium gluconate loom high in their list of essential drugs. Italian nuns, who as trained sisters staff the largest hospitals, have done excellent work.

Common Diseases

Of the prevalent diseases, malaria, rife in the coastal regions, is the commonest. Here an Albanian without an enlarged spleen is the exception. All three forms are found, and often a mixture of parasites is present in the blood of infected persons. The Rockefeller Institute made a determined effort to control the disease, and the Italians also tried, but the war stopped their activities, so that it has become more widespread of recent years. The incidence of typhoid and tuberculosis indicates the need for organizing a public health service and improving the low nutritional standard, for these two diseases claim a high toll of the population yearly. Syphilis, commonly of the congenital type, is prevalent, and massive untreated gummas are to be seen. Neurosyphilis is rare, probably owing to the coexistence of malaria. Louse-borne typhus is endemic, the odd case being found in most towns. Outbreaks have occurred recently with a low mortality rate—in one town a single death out of eighty cases—but there is always the possibility of a massive epidemic in a louse-ridden population. The doctors, well aware of this, are organizing disinfestation centres in the larger towns.

In the winter of 1943–4 frostbite among the guerilla fighters was not uncommon, our worst case requiring bilateral amputation just below the knee-joint, for which a carpenter's saw well soaked in disinfectant had to be used. Of great interest to me was the apparent high resistance and courage of these men: for example, we had no deaths in ten patients with compound fracture of the femur, who probably had been carried on an improvised stretcher for several days or with stinking suppurating wounds reached the surgical centre riding on a mule. This, in view of the general malnutrition, is amazing: practically no vitamin C is taken in the winter diet of the mountain villager, and yet clinical nutritional deficiency appears to be rare. Of the diseases associated with the Tropics, bacillary dysentery is seen in the summer, but amoebic dysentery is uncommon. Cases of trachoma and kala-azar are evident.

War has stopped the activities of what public health services there were functioning in the towns. Tirana, the capital, alone had a good midwifery service, but in the smaller towns an ambulance and nurses' training service used to exist under the guidance of the local Red Cross.

Achievements of British Doctors

Mention may be made of the type and scope of work I undertook. There is no doubt that some valuable work has been done by British doctors working in the enemy-occupied countries of the Balkans, and their limited efforts have been much appreciated. Their job has consisted in assisting the guerilla forces to establish a form of medical service in the mountains, forming first-aid and hospital units, giving advice as well as doing the surgery and ordering medical stores.

But many factors limited the scope of these activities. It was essential to run only small units which could be packed up and loaded on mules at an hour's notice, for mobility was very important. In the early days there was no evacuation, so that to establish lines of evacuation meant the herding together of casualties in a centre too big to move and probably the goal of a German drive, which invariably took the form of an encircling movement. At such times, when fighting would be at its heaviest, little more could be done than glorified first aid; then we would split up into small parties and lie low until the Germans returned to the more congenial life in the towns. Having managed to hide the bulk of our equipment, we would then start to collect and treat the now grossly purulent wounds which had been sustained a week or more earlier. Under such conditions it was usually impossible to operate on urgent head, chest, and abdominal wounds, and it was surprising to have two patients with abdominal through-and-through injuries make a complete recovery in a few days; they would most certainly have undergone laparotomy had conditions been more favourable.

The tremendous benefit which followed the making of landing strips for aircraft and the running-in of ships to small coastal bays under cover of darkness changed the whole outlook for the wounded and raised the morale of the partisans more than any other factor; and credit must be given to the bravery of those concerned in carrying out these hazardous operations. At no small cost the Albanians have driven the Fascist occupiers from their country. Now they look to the great task of rebuilding their impoverished country. Like so many countries in Europe to-day, Albania is undergoing the after-pains of liberation, but there are people who have the foresight and knowledge upon which to build a sound health service in a country that has been backward for so long.

THE INVESTIGATION OF NUTRITION

ATTEMPT TO STANDARDIZE METHODS

A year ago the English Group of the Nutrition Society set up an advisory committee for the co-ordination of dietary surveys in liberated territories. It was felt that the presence in this country of scientists from many lands at a time when interest in nutrition was aroused offered an opportunity for standardizing methods of investigation.

Accordingly it was decided to form three panels to draw up reports respectively on laboratory methods, clinical methods, and methods of survey of food consumption. The Laboratory Panel had Prof. L. Fridericia, of the University of Copenhagen, as its chairman; the Clinical Panel, Dr. H. M. Sinclair, of the Oxford Nutrition Survey; and the Surveys Panel, Dr. E. Bransby, of the Ministry of Health. The members were drawn from the League of Nations Health Organization, U.N.R.R.A., the Army Medical Directorate, the British Paediatric Association, and other bodies, and included experts from the United States and other countries. Prof. J. R. Marrack, director of the Bureau of Nutrition Surveys, was a member of all three panels, and evidently did much of the co-ordinating work.

The reports of two of the panels are now available; special difficulties have arisen in connexion with the report of the Clinical Methods Panel, which will appear later.* The two reports already available—one dealing with laboratory methods, and the other with dietary survey technique—must be the most comprehensive ever prepared in their respective fields.

Diversity of Laboratory Standards

The object of the Laboratory Panel is to ensure that the results of laboratory examinations on the state of health and nutrition of different groups of people, or of the same groups at different times, are expressed in figures which have the same meaning throughout the world. Unfortunately, owing to the difference in methods used, in the assumptions on which calcu-

* Copies of the reports will be supplied to persons undertaking surveys of nutrition, on application to the Nutrition Society, Bureau of Nutrition Surveys (Prof. J. R. Marrack, Director), London Hospital, E.1.

lations are based, in the standards adopted, and in personal factors, and to errors in instruments and different ways of expressing results, this uniformity is far from being obtained. An example is given of estimations of haemoglobin, which may be based on a variety of chemical and physical properties of haemoglobin itself and its derivatives. Results may be expressed in terms of oxygen capacity, iron content, weight of haemoglobin (and in calculating the weight the factors used may differ), or percentage of a conventional normal, and the conventional normal may range from 13.8 to 17.2 g. per 100 ml. The panel has therefore made a number of recommendations with a view to securing rapidity and simplicity in the methods used in surveys, standardization of apparatus, and expression of results in absolute units.

After some general recommendations concerning the proper taking of samples of blood the report enters upon a technical discussion of the estimation of haemoglobin. When a colorimeter of the photo-electric, photometric, or Dubosc type can be used the alkaline-haematin or the pyridine-haemochromogen method is recommended; when the colorimeter cannot be used then methods based on the estimation of the specific gravity of whole blood—namely, the copper sulphate method or the Linderström-Lang gradient—may be applied, or, if simpler types of colorimeter be used, the Sicca or Haldane methods may serve. All methods should be based on ultimate standardization against the oxygen capacity of normal blood estimated by van Slyke's method, or the iron content of haemoglobin or of washed red cells of normal blood, or the absorption spectrum of the haemoglobin determined spectro-photometrically. If the Haldane, Sicca, or similar methods in current use are employed the apparatus should be standardized against oxygen capacity, iron content, or absorption spectrum, but if such standardization is not possible, an approximate, indirect standardization may be obtained by the alkaline-haematin or pyridine-chromogen method, or, if this also is impossible, a rough check can be made by the copper-sulphate method or Linderström-Lang gradient.

It is also urged that all results should be expressed in terms of grammes of haemoglobin per 100 ml. of blood. It is recognized that many investigators will continue to use the methods with which they are familiar and those for which they have apparatus, and that some surveys in which such methods are used have already begun. The Sicca method of using reduced haemoglobin is specially recommended because it does not involve the accurate measurement of a small volume of blood. The Haldane method, again, has the advantage that the necessary apparatus, standardized by the National Physical Laboratory, can be obtained.

Haemoglobin Concentrations

The report includes a table giving the results of a large number of investigations of haemoglobin concentration by different workers in all parts of the world during the last twenty-five years. Among selected groups of men (students and others), all the 70 means, with 9 exceptions (3 below and 6 above), are found to lie between 14.70 and 16.25 g. of haemoglobin per 100 ml., and among the selected groups of women all the 50 means, with 8 exceptions (4 below and 4 above), lie between 12.9 and 14.15. In the unselected groups—wider sections of the population—the mean values are, on the whole, lower. Attention is drawn to observations which show that, when trustworthy methods are used, the haemoglobin level is not lower in England than in other parts of the world. The results of the British studies on children are remarkably consistent. There is evidence of a reduction during the period of the war when the food supply was least satisfactory. A large number of investigations have been made on the changes in the concentrations of haemoglobin in the blood in pregnancy, but the methods used in most of these have not been standardized.

It is pointed out that a low concentration of haemoglobin gives no indication of the cause or appropriate treatment of the anaemia. More can be learned if the erythrocytes also are counted or the cell volume measured, or both. Measurements of cell volume, although relatively few have been made, are the simplest and most trustworthy. Certain methods are also recommended for estimations of proteins in plasma or serum. These include exact and less exact estimations, and, if a differential estimation is not needed, specific gravity methods, which are extremely quick and convenient. The urinary saturation test for vitamin-C status and the relation between its results and the ascorbic acid in the diet and in plasma is described. Elaborate equipment and special chemicals are required for the biochemical evaluation of the nutritional status of the B vitamins, so that these procedures are not easily applicable for workers in the field.

The report is brought to an end with a bibliography of about 300 references. Altogether this report, though designed to meet a passing situation, is a piece of authoritative and co-ordinated work worthy of permanent covers.

Technique of Dietary Surveys

The Dietary Surveys Panel set itself to put forward methods whereby a quick appraisal of the food situation may be made. Some of the methods recommended, such as the log-book family survey, are of general applicability, but other questionary methods are suitable only for the specific conditions for which they were designed. Some might suppose that ration allowances give a sufficient indication of food conditions in a community, but it is necessary to bear in mind that foods rationed in one country may not be rationed in another, that rations on paper are not always available or equally distributed, and that the "black market" cuts right across any such simple method of assessment. The extent to which "black-market" transactions exist will be the measure of the extent to which the nutritional situation is worsened, at least as concerns the poorer urban families. Dietary surveys under the abnormal conditions prevailing on the Continent are, of course, difficult to organize, but the more abnormal the conditions the greater the need for the surveys.

The report mentions three classes of persons concerning whom information should be obtained: (1) the "vulnerables" with special nutritional needs (infants, pre-school and school children, and nursing and expectant mothers); (2) special classes of workers essential for the reconstruction of their locality or country; and (3) any grade or category known to be badly off. The panel proposes that four different types of dietary survey be made: by families, by individuals, by particular foodstuffs consumed, and by consumption in institutions and works canteens. Two family investigation techniques are suggested—one very simple and suitable for unsettled conditions, and the other more elaborate, for use when conditions become more or less stabilized. The selection of samples of the population, rural and urban, the proper size of a representative sample, and the presentation of results are discussed. The presentation of results comes under two heads: the actual *per caput* consumption of various foods, and the percentage which the nutrient intakes represent of the requirements.

The collection and analysis of such information is for the assistance of the national authorities and those responsible for the distribution of relief, so that they may have a reliable indication of the food conditions within the locality surveyed. Women students of dietetics or social workers are said to be better investigators than men, but the work also calls for the co-operation of the families investigated. The selected housewives are asked to make immediate entries on record forms of each parcel of food which comes into the house; the measurements of the food must be accurate, to the nearest gramme or decalitre, and the number and type of meals eaten out of the house by each member of the family must be set down. Again, the housewife, whilst co-operative, must not be unduly survey-conscious, or the result may be biased. It is a great deal to expect of the harassed working woman, but some of the heroines who have survived the shopping queue and the meagre larder will rise to this occasion.

Situation in European Countries

A valuable addendum to this report is a series of tables showing the nutrient values which should be applied to the indigenous European food supplies and also to the types of relief food likely to be imported. They have been prepared by a working party of experts, of which Sir Jack Drummond was one. The inquiry has covered 16 European countries. The tables give the values in calories and in proteins, fats, and carbohydrates for 70 different food commodities, with com-

ments on the position in different European countries. In Belgium, Czechoslovakia, and also in Holland for priority classes, milk is now standardized to 2.5% fat content; in Denmark the average fat content is 3.8%. In many European countries such beef as is available comes from very lean dairy cows and has about the same food value as horse-flesh. The group found that most of the wheat flour consumed in each country is around 85% extraction—in Belgium it is 90%, and in France 95%—and that to apply this rate to all the supplies for each country would involve no serious error. Considerable study has been given to the values for potatoes, and a somewhat higher value in carbohydrates (14.6 per 100 g. of food as purchased) has been adopted than the starch figure in the Medical Research Council's report. Under wartime conditions cereals and potatoes should provide more than 50% of the calories of the diet, but a diet with more than 60% of calories in this form is unattractive to the urban worker. The total fat in the diet, including the "invisible" fat of meat, milk, cheese, and other foods, should provide 20% of the total calories. A diet containing less than 10% of "visible" fat—butter, margarine, lard, and oils—again tends to be unattractive by Western European standards. Not less than 10% of the total calories should be in sugar in the case of populations accustomed to considerable amounts of it. The proportion of total calories derived from meat, fish, and dairy produce should be not less than 12%.

The investigators add that in making the appraisement of the nutritional position as reflected by the food supply information for each country, it is assumed that distribution will be based on priority provision for expectant and nursing mothers and for children, and on an equable distribution of the balance of foods among the other groups of the population. Any other assumption makes it difficult to reach an appraisal.

The immense work represented in these reports is worthy of all commendation and is a testimony to the standard to which the science of nutrition has been raised, largely as a result of war experience. But the study of scientific minimums, while right and necessary, must never be allowed to obscure the supreme need, which is to get food, surplus to requirements if possible, to hungry populations with all speed.

THE CAMPAIGN AGAINST CANCER

The annual general meeting of the British Empire Cancer Campaign was held on Dec. 19 under the chairmanship of Lord Hailsham. The Duke of Gloucester, president of the Campaign, sent a message from Canberra testifying to his continued interest. He also paid a tribute, as did Lord Hailsham and others, to the services of Capt. E. J. C. Chapman, who has been general secretary since the start of the Campaign in 1924, and is retiring. Two informal conferences had been held, under the chairmanship of Lord Horder, at which the Royal Society and other bodies were represented, to discuss the application of recent knowledge in the field of atomic energy to the treatment of cancer. Representatives of the Campaign, as well as others who attended the conferences, had been appointed to the research committee set up by the Government on the medical and biological application of nuclear physics.

In moving the adoption of the annual report Dr. Malcolm Donaldson said that one unfounded criticism of the Campaign was that it took no notice of suggestions from non-medical people. The chance of getting any help from those who had no knowledge of the subject was small, but in fact the Campaign had an information committee which considered every suggestion submitted. Another criticism was that the Campaign did not sufficiently concentrate its efforts. Before any concentration was possible an immense amount of individual work had to be done, but through the Clinical Cancer Research Committee the time was approaching when it would be possible to concentrate their efforts, and one of the first targets might well be the problem of alleviation of pain in the later stages of the disease.

Reports from Many Centres

The annual report is a collection of records of work from cancer research laboratories in all parts of the kingdom, individual research workers, and branches of the Campaign in the Dominions. The Middlesex Hospital Research Laboratories describe the endeavour to complete the synthesis of compounds in the stilboestrol series, but no substance of greater activity than stilboestrol itself has yet been found. Intensive research is being carried out on the metabolism of synthetic oestrogens, especially in relation to treatment of carcinoma of the prostate and of the breast. So far the application to inoperable carcinoma of the breast has led to no conclusive results. Some experiments on mice are reported from the Cancer Research Department of the London Hospital, from which it appears that the purine compounds adenylic and guanylic acid exert an inhibitory action on tumour growth; but here again further observations over a large number of mice are required before conclusions can be drawn on the specific action of the individual nucleotides on the growth of sarcomas.

A study of the pathology of operation specimens of cancer of the colon, made at St. Mark's Hospital, has shown that in that region of the bowel growths of a low order of malignancy are commoner than in other regions. The histology of the primary tumour, the extent of venous spread, and the incidence of lymphatic metastases, all point to the conclusion that cancer of the colon must be regarded as a relatively favourable field for surgical treatment, though the prospects of surgery, as in any form of cancer, depend also upon several other factors. A survey at the same hospital of cancer of the recto-sigmoid region has shown that about half the patients who survived a combined excision of the rectum were alive after five years. Those who have the best prospect of survival are patients in whom there is no local spread beyond the rectal muscle, no detectable venous spread, and no lymphatic metastases; the five-year survival rate for such cases is 82%.

Reports of work from the Royal Cancer Hospital show that a very high incidence of cancer may not be accompanied by any decrease in the incubation period. Thus the mean age at death from cancer of the scrotum is at present almost the same in chimney sweeps as in the general population (about 59 years), although the liability to the disease among sweeps is enormously greater (543 as against 4.1 deaths per million per annum). Similarly, in the case of occupational cancer of the lung, the high incidence among chromate workers in Germany was not found to be accompanied by any lowering of the mean age (60 years) at death from this form of cancer in the general population.

Radiological Investigations

At the Cambridge University Research Centre of the Campaign some detailed cytological studies have been made, by means of serial biopsies, of the effect of *x* and gamma rays on human malignant tumours. In carcinoma of the cervix anaplastic growths most often fail to respond to irradiation techniques. These tumours contain cells which do not differentiate as a result of the radiation given, survive exposures to heavy doses, and subsequently divide, causing a recrudescence of the tumour. Modified irradiation techniques are being investigated at Mount Vernon. One new method of application is in intracavity radium treatment of the cervix. A radium source of 70 mg. is used in the body of the uterus and two sources of 140 mg. each in the vagina; massive platinum screening makes possible a threefold increase in the minimum γ-ray dose delivered to tumour tissue.

A study of the treatment of uterine cancer by radium has been continued at the Marie Curie Hospital. Of 1,410 cases of cancer of the uterine cervix treated over five years ago, 36.9% were found to be alive. Excluding deaths due to intercurrent diseases and cases not traced, the net five-year survival rate was 38%. Radium alone appears to remain the method of choice until a combined radium and *x*-ray technique can be found which will deliver an adequate radiation to the tumour without increasing intestinal morbidity.

Carcinogenic Agents

Much work in many quarters is being continued on carcinogenic agents, in particular benzpyrene. One finding, from the Mount Vernon laboratories, is that a significantly greater number of tumours arise in the skin of mice pre-painted with croton oil and painted once with benzpyrene when the painting is done at midnight than when it is done at midday. The correlation with diurnal variations in mitotic activity points to the conclu-

sion that the specific action of the benzpyrene is upon the dividing cells. At Newcastle-upon-Tyne, in the cancer research laboratory of the Royal Victoria Infirmary, an extensive study has been made of the relationship between the solvent used for the injection of benzpyrene solutions into mice, the rate of excretion of this hydrocarbon, and the incidence of cancer resulting. The anticancer effect of mouse fat and brain lipids as solvents has been traced to their phosphatid content. Removal of phosphatides removes the anticancer activity. At Leeds confirmation has been obtained of a claim made in the United States that urethane, repeatedly administered, causes pulmonary tumours in mice.

Cancer of Pharynx and Larynx

The Clinical Cancer Research Committee, under the chairmanship of Lord Horder, presents each year a detailed statistical analysis of a large number of cases of cancer in a particular region. The information is obtained with the co-operation of London hospitals. This year about 500 cases of cancer of the pharynx and larynx have been analysed from every point of view—age distribution, occupation, first symptoms, type of growth, methods of treatment, five-year results, and other angles. Males predominated over females in a ratio of ten or more to one, except in the case of the oropharynx, where the numbers were nearly equal, and in the postcricoid region with a ratio of three females to one male. Only 19 of the 384 pharynx cases survived five years. Of 124 larynx cases, 26 survived for that time. Laryngofissure in the early cases gave a survival rate of 91% of the normal expectation of life over a five-year period. One part of the investigation concerned the effect of tobacco and alcohol, but the large proportion of cancer subjects concerning whom there was no information on these points prevent any conclusions from being drawn. Of 307 male patients, 232 were said to smoke in moderation, 64 to excess, and 11 were non-smokers, and of 291 whose history in respect of alcohol was known, 227 took it in moderation, 27 to excess, and 37 were total abstainers.

One industrial precaution mentioned in the report by investigators from the Middlesex Hospital Research Laboratories concerns persons exposed to risk in luminous-dial factories. An account of the measurement of radon contained in the air of many such factories is given. It is inevitable that the air in such factories should contain some radon, but it can be kept down to a concentration of about 10^{-10} curie per litre, and that is very unlikely to be detrimental to health.

Once more the report of the Campaign has the great advantage of Mr. J. P. Lockhart-Mummery's editorship. It is not easy to present with any sequence work which is proceeding in many centres and often overlapping. The funds of the Campaign are steadily increasing—there was an excess of income over expenditure for the year ending July 31 last of over £50,000—in preparation for the increased "drive" in cancer research which is likely to follow the war.

COMMONWEALTH FUND FELLOWSHIPS

The Commonwealth Fund of New York, a philanthropic foundation existing since 1918, has established for British subjects a number of Fellowships tenable in the United States. The Fellowships were interrupted in 1941 by the war, but it is hoped to make a limited number of appointments in 1946. For these the following are eligible: Male candidates of British descent who are domiciled in the United Kingdom of Great Britain and Northern Ireland, and are graduates of recognized universities therein. Candidates must be over 23 and must not have attained the age of 35 on Sept. 1 of the year of award. These Fellowships are also open to candidates of British descent from the British Dominions distant from the United States, who have studied but not necessarily graduated at a university in the United Kingdom, and are graduates of a recognized university in a British Dominion or Colony, and who fulfil the conditions regarding age prescribed above. Such candidates need not show a permanent domicile in the United Kingdom, but must be available for interview in London in May.

Principles of Selection and Conditions of Tenure

The Committee of Award is prepared to consider applications from candidates who have shown marked ability during their university career, and who desire to extend their studies in an American university or other establishment. Special consideration will be given to the experience acquired during war service. Experience in research and in postgraduate study, though a valuable, is in no sense a necessary, qualification, nor is the Fellow bound to engage in original work, but evidence of proficiency in some recognized branch of university learning must be submitted and an approved course of study undertaken. The committee must be satisfied that the candidate is likely to profit by the Fellowship, and while primary consideration is given to intellectual ability, initiative, and actual or potential achievement, account is also taken of character, personality, and health. Other things being equal, preference for awards will be given to men holding posts from which they can secure leave of absence, or to men who have definite vocational plans for a career. Candidates may state in order of preference the American university or other establishment at which they wish to study.

The committee hopes to announce early in May the names of candidates selected for interview, and to publish the awards before the end of that month. Arrangements will be made for medical examination of the candidates to be interviewed, and all expenses connected with the medical examination and interview will be borne by the Commonwealth Fund. The committee will consider only those who are prepared to give an undertaking that they will not accept another appointment until the expiration of the Fellowship, and that they will then return to some part of the British Empire and reside there for not less than two years, unless they are permitted to remain in the United States for reasons acceptable to the Fund. No one is eligible if he has already studied or worked in any educational or research institution in the United States for one or more academic years.

There is no fixed stipend, but the emolument attaching to each Fellowship, estimated at a minimum of approximately $3,500 for twelve months, is calculated to cover the full expenses of residence, study, and travel in the United States during the year. Each Fellowship includes provision for: (*a*) an equipment allowance of $100 and the cost of travel from the Fellow's home to the place of his assignment and return; (*b*) tuition, research expense, etc.; (*c*) a minimum of $175 a month, paid quarterly, for living expenses for twelve months from the date of sailing (an advance of $50 on the first quarterly payment is made); (*d*) an allowance of $100 for travel during the Christmas holidays, if approved by the Fund; (*e*) an allowance of $500 for travel in the United States at the end of the academic year, or at other times if approved by the Fund.

Tenure of a Fellowship involves an absence from Great Britain of twelve months, including a period of travel in the United States. Except for grave reasons, which must be stated in the application, Fellows will be expected to reach the United States not later than September of the year of award, or in the case of Fellows assigned to the University of California, in August. Though the standard tenure is twelve months, awards of an additional university year of nine months may be made, on application, to especially outstanding men who have valid reasons for such extensions, and whose applications are strongly supported. Certain conditions as regards recent vaccination are demanded by American universities, and candidates must be willing to comply with these conditions.

A Commonwealth Fund Fellowship is not tenable with a fellowship or scholarship from any other foundation established for a similar purpose. Candidates may, however, be applicants also for fellowships offered by such foundations, provided they do not accept more than one appointment. Speaking generally, no limitation is imposed on the subject of study to be undertaken during the tenure of the Fellowship. In the particular case of candidates in medicine, however, while research in the medical sciences, or in clinical medicine or surgery, is regarded as within the scheme, routine clinical work is excluded. Fellows are not required to follow either a degree or other ordinarily prescribed course in an American university; they are asked to submit their own programmes of work, but these will require the approval both of the Committee of Award and of the American institution. They may be permitted to change their scheme of work, or the institution at which they are studying, or to receive leave of absence, but only for reasons satisfactory to the Directors of the Commonwealth Fund. Although Fellows may be married, no provision is made for taking wives and children to the United States, and a Fellow may not marry during the tenure of his Fellowship.

All applications must be submitted on the prescribed form, and must be approved by the authorities of the college or university of which the candidate is, or has been, a member. They must reach Mr. Richard H. Simpson, Secretary, Commonwealth Fund Fellowships, 35, Portman Square, London, W.1, by Feb. 28, 1946, at latest. Further information can be obtained from the secretary, who will also supply application forms, and, so far as is possible, catalogues, bulletins, courses of study, etc., issued by various American universities.

Quinine may now be used for the induction of labour. In announcing this the Ministry of Health states that while the supply position of cinchona products still calls for strict economy it has improved sufficiently in the case of quinine for the Ministry of Supply to agree to this limited use.

NEW YEAR MEDICAL HONOURS

We have received from the Air Ministry the names of the following members of the Medical Branch of the R.A.F., included in the New Year Honours List but additional to those published last week at page 60.

C.B.E. (Military Division)

Air Commodore (Acting Air Vice-Marshal) KENNETH BIGGS, *M.C.*, M.R.C.S., R.A.F.

Air Commodore (Acting Air Vice-Marshal) DUNCAN MCLAREN, M.B., Ch.B., R.A.F.

Acting Air Commodore FREDERICK JOHN MURPHY, M.B., B.Ch., R.A.F.

Group Capt. VINCENT RUSSELL SMITH, M.R.C.S., R.A.F.

Acting Air Commodore WILLIAM JOHN GREAVES WALKER, M.R.C.S., R.A.F.

O.B.E. (Military Division)

Group Capt. JOHN FREDERICK BROMLEY, M.B., Ch.B., R.A.F.V.R.

Group Capt. ALBERT FREDERICK COOK, L.R.C.P.&S.I., R.A.F.

Squad. Ldr. LEONARD DUNCAN ALBERT HUSSEY, M.R.C.S., R.A.F.V.R.

Acting Squad. Ldr. WILLIAM LEONARD JAMES, M.R.C.S., R.A.F.V.R.

M.B.E. (Military Division)

Acting Squad. Ldr. WILLIAM OLIPHANT BAIRD, M.R.C.S., R.A.F.V.R.

Acting Squad. Ldr. FRANCIS JOHN HALLINAN, M.B., B.Ch., R.A.F.V.R.

Fl. Lieut. KENNETH MICHAEL HAY, M.B., B.Chir., R.A.F.V.R.

Fl. Lieut. ALEXANDER FINLAYSON LANG, M.B., Ch.B., R.A.F.V.R.

Squad Ldr. KENNETH ARTHUR WARING LAW, M.B., B.S., A.A.F.

A.F.C.

Wing Cmdr. JAMES RINTOUL CELLARS, M.B., Ch.B., R.A.F.

Mentioned in Dispatches

Group. Capts. V. S. Ewing, F. W. P. Dixon, M.B.E., and H. C. S. Pimblett, R.A.F.; Wing Cmdrs. H. E. Bellringer, H. F. Harvey, L. P. McCullagh, J. C. Taylor, E. B. Harvey, F. V. MacLaine, and A. Muir, R.A.F.; Wing Cmdrs. R. E. W. Fisher, R. C. Jackson, and H. P. R. Smith, A.F.C., R.A.F.O.; Wing Cmdrs. K. G. Bergin, T. A. W. Edwards, J. B. Methven, and J. V. Quinn, R.A.F.V.R.; Wing Cmdr. E. O. Walker, A.A.F.; Squad. Ldr. R. MacPherson, R.A.F.; Squad. Ldrs. B. A. J. Arthure, J. C. McC. Browne, F. R. Buckler, E. O. Evans, B. J. Frankenberg, M. O. J. Gibson, C. W. R. Rayne-Davis, E. P. S. Snell, J. Watson, P. A. Carrie, W. P. Greening, H. Haison, A. Hargreaves, G. G. Hartill, G. O. Horne, I. C. B. Pearce, E. E. Philipp, D. C. Russell, J. H. Spence, and T. F. Stewart, R.A.F.V.R.; Squad. Ldr. T. G. Davies, A.A.F.; Squad. Ldr. M. McLellan, R.A.F.O.; Squad. Ldr. Janet MacL. MacKay, R.A.F.; Fl. Lieuts. N. N. Blaxland, E. S. Brawn, H. D. Freeth, S. Gruber, M. J. Howlett, G. E. McFall, and R. M. S. Matthews, R.A.F.V.R.; Fl. Lieut. Caroline E. Nicholson, R.A.F.

Part II of the New Year Honours was published on Jan. 9, and included the names of the following members of the medical profession:

O.B.E. (Civil Division)

SAUL ADLER, M.B., Ch.B., M.R.C.P. Professor of Parasitology, Hadassah University, Palestine. For services to the Forces.

PERCY REGINALD BOLUS, M.B. Director of Medical Services, Ministry of Pensions.

JOHN LAIRD MCKENZIE BROWN, M.R.C.S. Medical Officer for Civil Defence, Metropolitan Essex.

WILFRID SAMUEL HAMILTON CAMPBELL, M.B., Ch.B., D.P.H. County Medical Officer, Lincolnshire (Lindsey) County Council. For services to civil defence.

DOUGLAS HENRY COLLINS, M.D. Medical Superintendent, Wharncliffe Emergency Hospital, Sheffield.

MARY AYLWIN COTTON, M.B., B.S. Principal, Foreign Office. Recently employed in the Ministry of Economic Warfare.

ALEXANDER MILLAR MEEK GRIERSON, M.D., D.P.H. Senior Assistant Medical Officer, Manchester. For services to civil defence.

LESLIE GEORGE HOUSDEN, M.D. Chairman, Mothercraft Training Subcommittee, National Association of Maternity and Child Welfare Centres.

JOHN JEFFREY, M.D., F.R.C.S.Ed. Hospital Officer, Aberdeen, Department of Health for Scotland.

JAMES JOHNSTONE, M.B., Ch.B., D.P.H. Medical Superintendent, Hairmyres Hospital, Lanarkshire. For services to civil defence.

Major ALEXANDER CAMPBELL WHITE KNOX, *M.C.*, M.B., B.Ch. Assistant Commissioner, No. 1 District, St. John Ambulance Brigade.

IAN HYSLOP MCCLURE, M.B., Ch.B., F.R.C.S.Ed. Consultant Surgeon, County of Orkney. For services to civil defence.

WYLIE MCKISSOCK, M.S., F.R.C.S. Surgeon-in-charge, Neurosurgical Centre, Atkinson Morley Emergency Hospital, Wimbledon.

HENRY JOHN NIGHTINGALE, M.S., F.R.C.S. Senior Surgeon, Royal South Hants and Southampton Hospital, Emergency Medical Service.

WILLIAM POWELL PHILLIPS, M.R.C.S., D.P.H. Deputy Medical Officer of Health, Cardiff. For services to civil defence.

THOMAS POOLE, L.R.C.P.&S.Ed., L.R.F.P.S. Lately Medical Officer-in-charge, Military Prison and Detention Barracks, Riddrie, Glasgow.

SYDNEY CLIFFORD PRITCHARD, M.D. Medical Officer-in-charge, Hornsey Central Hospital, Emergency Medical Service.

STEPHEN JOHN SCURLOCK, *M.C.*, M.D., M.S. Medical Superintendent, Ministry of Pensions.

IAN SCOTT SMILLIE, M.B., F.R.C.S.Ed., F.R.F.P.S. Orthopaedic Surgeon, Scottish Emergency Medical Service.

BRYCE MCCALL SMITH, M.B., Ch.B. Medical Superintendent, Victoria Infirmary, Glasgow. For services to civil defence.

THOMAS EDWIN PRYCE-TANNATT, M.B., B.S., D.P.H. Inspector of Salmon and Fresh Water Fisheries, Ministry of Agriculture and Fisheries.

GEOFFREY SYDNEY TODD, M.B., Ch.M., F.R.C.P. Medical Superintendent, King Edward VII Sanatorium. For services to civil defence.

BEATRICE ETHEL TURNER, M.B., B.S.Lond., F.R.C.S.Ed., F.R.C.O.G. Consultant Obstetrician, Shardeloes Emergency Maternity Hospital, Bucks.

JOHN THEODORE WHITELEY, M.B., Ch.B. Assistant Commissioner, Essex, St. John Ambulance Brigade.

M.B.E. (Civil Division)

Capt. CHARLES ANDRÉ BATHFIELD, G.M., M.R.C.S. Station Medical Officer, Air Transport Auxiliary.

WILLIAM FUNSTON BRYSON, M.B., B.Ch. Secretary, Enniskillen Hospitality Committee.

GLADYS ANYAN DANBY, L.M.S.S.A. County Superintendent, Somerset, St. John Ambulance Brigade.

MARGARET HOLLIDAY, F.R.C.S.I. Resident Medical Officer, Maternity Hospital for the Wives of Officers, Fulmer Chase, Buckinghamshire.

JOHN INGRAM, M.B., C.M. Medical Practitioner, Camp Reception Station, St. Agnes, Southern Command, War Office.

PHILIP INWALD, M.B., B.S. Medical Officer-in-charge, Civil Defence Mobile First Aid Unit, Islington.

EMMA MARY JOHNSTONE, L.R.C.P.&S.Ed., L.R.F.P.S. Lately Medical Officer-in-charge of Mobile Civil Defence Aid Post, Westminster.

ETHEL WINIFRED LEE, M.B., Ch.B. County Borough Organizer, Hastings, Women's Voluntary Services. For services to civil defence.

JOHN WILLIAM PARKS, M.D. Assistant Medical Officer, General Post Office.

ORDER OF ST. JOHN OF JERUSALEM

The *London Gazette* has announced the following promotions in, and appointments to, the Venerable Order of the Hospital of St. John of Jerusalem:

As Knights: Lieut.-Gen. Sir James B. Hance, K.C.I.E., O.B.E., K.H.S. I.M.S., Cols. W. Vickers, D.S.O., V.D., W. W. White, V.D., and J. R. Donaldson, and Dr. J. N. Morris, C.M.G. *As Commanders (Brothers):* Major-Gen. R. H. Candy, C.I.E., K.H.S., I.M.S., Major W. N. West-Watson, Messrs. A. G. Timbrell Fisher, *M.C.*, and J. H. G. Robertson, C.B.E., V.D., and Drs. E. Hoerman, K. F. Lund, J. W. P. Harkness, C.M.G., O.B.E., and T. W. Meagher. *As Officers (Brothers):* Surg. Cmdrs. H. K. Corkill, O.B.E., R.N.Z.N., and W. A. Hopkins, O.B.E., Col. W. E. R. Dimond, C.I.E., O.B.E., I.M.S., Lieut.-Cols. S. Hunt, and E. H. Wood, and Lieut.-Col. P. A. Dargan, I.M.S., Majors S. H. Calnek, R.C.A.M.C., and J. F. Hamilton, Messrs. R. D. McKellar-Hall and C. G. Morice and Drs. O. T. J. C. de H. Clayre, C. R. Palmer, W. H. Pallett, J. P. Lowe, W. Murray, C. R. Corfield, E. R. Weaver-Adams, J. P. Prell, T. B. Gilchrist, A. Juett, D. D. McCowan, H. W. Ward, J. R. Hanna, W. B. Fox, H. E. Moore, B. T. Parsons-Smith, W. E. Rutledge, E. H. M. Luke, E. R. Selby, K. C. McGibbon, A. Rioux, W. W. Read, and H. J. Shone. *As Officer (Sister):* Dr. Hilda M. Davis. *As Serving Brothers:* Majors F. A. B. Sheppard, O.B.E., I.M.S., and G. Brown, and Drs. F. W. Furniss, W. Duncan, H. G. Watson, H. T. Chapman, S. B. Sutton, P. G. Commons, D. D. Coutts, E. W. Battle, T. H. Forrest, D.S.O., J. S. Cooper, N. G. H. Salmon, R. A. Dench, *M.C.*, R. S. Renton, *M.C.*, R. W. Pearson, *M.C.*, E. Palmer, H. C. Williams, E. S. Johnson, *M.C.*, J. A. Hislop, H. M. Jacobs, S. G. H. Gasson, B. J. Dudley, J. U. Page, J. B. Liggins, M. H. Box, A. B. Webster, J. K. Manson, G. E. Valentine, F. McLagen, A. M. Gillespie, O.B.E., and D. Lennox. *As Associate Serving Brothers:* Rai Sahib Dr. H. Prasad, Rao Sahob Dr. K. N. Nair, and Rai Sahib Dr. B. R. Kishor, Mr. I. Blain, and Drs. S. M. Bangurnah, M.M. Bronstein, G. K. Ghosh, N. P. Chakraverty, A. K. Handiekar, M. G. Kini, *M.C.*, K. G. Ramabadran, and B. B. Rai. *As Serving Sisters:* Drs. Lucie Van Dam, Olivia N. Walker, and Beatrice M. Joly. *As Associate Serving Sisters:* Drs. Rose Baranov and Hilde Ginsberg.

Reports of Societies

HUMAN GAMMA-GLOBULIN

A meeting of the Fever Group of the Society of Medical Officers of Health was held on Nov. 30, 1945, with Dr. M. MITMAN in the chair.

Mr. B. R. RECORD, Ph.D. (Lister Institute), who opened the discussion, said that the realization that the various antibodies present in immune serum were associated with the globulin part of the serum, and indeed for the most part with a particular kind of globulin, had stimulated research into methods of separating human plasma into its component parts. The ultra-centrifuge and the electrophoresis apparatus had proved of the greatest value in this work. In the ultra-centrifuge, human plasma showed, broadly speaking, only two sedimenting boundaries, corresponding to a fast-sedimenting component, globulin, and a slower-sedimenting component, the albumin. In the electrophoresis apparatus, on the other hand, at blood *p*H the serum globulin appeared as at least three distinct components, designated α-, β-, and γ-globulin, in descending order of mobility. These different globulins had essentially the same molecular size and shape, and therefore sedimented as a single boundary in the ultra-centrifuge, but they had different ionizable groups, and therefore different rates of migration in an electric field. For this reason electrophoresis had become a most valuable analytical method in studies on the fractionation of plasma protein. Electrophoresis had not so far been developed for the separation of plasma components on a large scale During the war Cohn and his co-workers had made an extensive study of the alcohol fractionation of human plasma, and this method was used in America for the large-scale preparation of various components of human plasma. Most of the antibody activity had been found to be associated with the γ-globulin fraction, which had been used clinically in the prophylaxis and treatment of measles.

Clinical Trials

Dr. W. GUNN (L.C.C.) said that the development of the clinical use of the various components of human plasma protein followed naturally Cohn's fundamental researches on their separation by high-speed centrifugalization and electrophoresis, and subsequent analysis of their biochemical and immunological characters. The main component, albumin, comprising 50 to 60% of the protein, was shown to have a very high osmotic activity. It was used on a considerable scale in a 25% solution to combat shock among American Service casualties. The globulin fraction originally designated Fraction II, now generally referred to as γ-globulin, represented about 11% of the total protein, and contained all the immune substances in the circulating blood. Though the amino-acid constitution of this fraction differed appreciably from that of α- and β-globulins, attempts to identify and isolate pure antibody, and to correlate its immunological properties with its chemical constitution, had hitherto failed.

Gamma-globulin was prepared in a specially buffered solution having a protein content of $16.5 \pm 1.5\%$ in 5-c.cm. ampoules, each representing approximately 125 c.cm. of the parent plasma (from a pool obtained from several thousand donors). It was relatively stable compared with unaltered human serum and could be heated at 57° C. for four hours without loss of potency; this destroyed the agent of homologous serum jaundice. Samples of Cohn's original Fraction II, and several batches of γ-globulin prepared by different American manufacturers, were made available by the courtesy of the American Red Cross for clinical trial in this country.

Preliminary tests revealed that, volume for volume, γ-globulin was approximately twice as potent against measles as an average pooled convalescent serum. In the trials the recommended American dosage of 0.1 c.cm. per lb. (454 g.) body weight was followed; this was found sufficient for protection at ages under 1 year and over 5 years, but in the most susceptible age group, 1 to 5 years, protection failed in 10 to 15%. In nearly all there was moderate to pronounced attenuation, except in respect of one particular batch. The majority of the inoculations were given to home and hospital, or nursery, measles contacts in and around London, and in Glasgow, where the trials, carried out under the supervision of Dr. T. Anderson at Knightswood Fever Hospital, gave substantially the same results. Some degree of success had been claimed for it by American workers in the prevention of infectious jaundice. The speaker referred to a small unctrolled series of whooping-cough and chicken-pox cases successfully protected, and suggested that its use might be extended to the control of all the ordinary infectious diseases. In the treatment of measles its action had been found less certain, but more clear-cut results might be expected from the intravenous administration of the latest preparation, which Cohn had recently claimed to be free from risk.

Comparison with Convalescent Serum

Dr. NORMAN D. BEGG (L.C.C.) described a comparative test between γ-globulin and a dried, reconstituted, batch of convalescent measles serum. As modification of attack and not prevention was the aim, dosage had been pitched low. He summarized the experience of five outbreaks of measles in whooping-cough wards. Of 22 susceptible contacts injected with 2.5 c.cm. of the convalescent measles serum, 12 developed measles and only 4 of these were very sharply attenuated; 24 contacts of comparable ages from the same outbreaks injected with 1.2 c.cm. of γ-globulin produced 8 cases of measles, of which 6 were very much modified. The result of this limited experience indicated that γ-globulin had a measles antibody content at least twice that of convalescent measles serum, but further experience was necessary to fix dosage more precisely, and to decide on the importance of adjusting dosage to body weight at various ages.

For the prevention of measles in exposed contacts he had tried the American recommendation of 0.1 c.cm. per lb. body weight, with results which indicated that, with adequate preliminary field-testing of individual batches, γ-globulin would give high protection rates in this dosage. The results of treating established measles had been disappointing. One case in particular given 15 c.cm. of γ-globulin intramuscularly when the first Koplik's spots were visible, and 54 hours before the skin eruption appeared, had later developed an entirely unmodified attack of measles.

Treatment of Poliomyelitis

Dr. W. H. KELLEHER (L.C.C.) said that the value of any serum in the treatment of poliomyelitis was doubtful. He had abandoned the use of convalescent poliomyelitis serum for this purpose, but decided to treat a series of cases with γ-globulin. The results in 10 cases of poliomyelitis, given an average dose of 34 c.cm., were entirely negative. Inconclusive results had been obtained in treating two cases of acute toxic polyneuritis, and no improvement resulted from the use of γ-globulin in one case of acute myelitis. He had noted a failure to develop paralysis in poliomyelitis contacts with definite cerebrospinal-fluid changes who had been injected with γ-globulin, but this was a naturally occurring phenomenon and probably without significance. In reply to a question he said that he had not given γ-globulin intrathecally, and that there were physiological reasons against antibody reaching the anterior horn cells by that route.

Dr. H. J. PARISH (Beckenham) thought that the apparent complete failure of γ-globulin in the treatment of measles indicated that its antibody content might not be so high as was thought; and he suggested that it would be worth while preparing γ-globulin from convalescent measles serum in an attempt to produce a therapeutic measles serum.

Changes in the industrial service provided by the Royal Society for the Prevention of Accidents are to have effect in April. This is due to the ending of the arrangements made with the Ministry of Labour and National Service in 1940, by which a free wartime basic service of accident-prevention material was supplied to several thousand firms engaged on war work. Under the new arrangement the industrial side of the society will revert to a membership basis, though it will continue to work in the closest touch with the Government. Service will be provided on a co-operative, non-profit-making basis. A new membership scheme will replace the earlier one in operation up to 1940. As support from industry is increased, services will be extended and improved according to a definite plan which has been worked out during the past eighteen months. Notice of the change has been given to industrial undertakings in a circular issued from Terminal House, 52, Grosvenor Gardens, London, S.W.1.

Correspondence

Nutrition in Vienna

SIR,—The current ration scale in Vienna is designed to provide 1,550 calories for the lowest group of "normal consumers," 1,750 for "employees," 2,250 for workers, and 3,000 for heavy workers. The children's scale ranges from 1,000 to 1,550 calories. These rations represent an average diet per head of the population providing 1,931 calories daily. Perhaps I did not make it clear before that the tentative figure of 1,600 calories, which I ventured to print in my article published in the *Journal* of Dec. 15, 1945 (p. 839), as an estimate of the minimum energy intake which might be hoped to maintain the lowest ration group, would involve for the whole population a *per capita* consumption of almost exactly the 2,000 calories which you yourself in your leading article (p. 852) consider it reasonable to take as the "rock bottom . . . minimum requirement needed to prevent disease and unrest."

The responsibility of anyone with a claim to knowledge of nutrition whose duty it is to try to influence food policy in Austria is a heavy one. How hard it is, therefore, to give nutritional advice as to what really is a minimum need when the scientific facts are themselves difficult to interpret, and when to include a "margin of safety" for one community and thus assess what one hopes is the physiological minimum too high, might well involve others who have equal claims on the same inadequate food supply in nutritional disaster.—I am, etc.,

Allied Commission for Austria, Vienna. MAGNUS PYKE.

Tropical Medicine in the United Kingdom

SIR,—In view of the interest recently aroused in the present status of the teaching of tropical medicine in London and also in the United Kingdom (Dr. A. R. D. Adams and others (Dec. 22, p. 895) and Dr. G. Macdonald (Jan. 5, p. 26)) some statement about the facilities for the treatment of sufferers from tropical diseases in London may not be out of place.

In this respect it is unfortunate that the compilers of the otherwise excellent Goodenough report did not avail themselves of the advice of a single authority on tropical medicine in making their recommendations, and thus were led to conclusions which are generally unacceptable in this respect, though their concrete proposals for establishing links and outposts of the Tropical School in the Empire and of seconding special students to oversea hospitals is a policy I have constantly advocated.

I have been connected with the London School of Tropical Medicine for a great many years and on the staff of the Hospital for Tropical Diseases now for a quarter of a century. During this period I have been responsible to some extent for the clinical part of the teaching course, which has entailed the provision of suitable patients for clinical instruction of large postgraduate classes in tropical medicine. The Hospital for Tropical Diseases in Endsleigh Gardens, which had to be abandoned at the commencement of the war, suffered from the lack of popular and Governmental support. In the first place it could not be asserted that the building, which had been improvised, was exactly suitable for its purpose. While other countries—such as Holland, Belgium, Italy, and Germany—without such vital interests at stake all possessed well-equipped modern hospitals, this, the metropolis of the great and opulent British Empire, had to be content with a makeshift structure. It was, therefore, with something akin to a sense of shame that one had to conduct distinguished foreign visitors round a building which they had travelled far to see as the Mecca of tropical medicine and the monument to Sir Patrick Manson, the father of tropical medicine.

Nevertheless, inadequate as it may have been in equipment and appearance during the twenty years of its existence, it provided adequate clinical material for both teaching and research. This can be assessed by the number of scientific communications which emanated from members of the staff, and by the fact that some of them were of sufficient merit to gain their author the Fellowship of the Royal Society. The clinical observations also provided enough material for inclusion in successive editions of Manson's *Tropical Diseases*, which serves as the textbook for students not only in this country but also in the English-speaking world. Clinical demonstrations held twice weekly were always well attended and often included other members of the profession in addition to the tropical class. In my own case most of the clinical conditions demonstrated were derived from my own practice, as this was for me by far the most fruitful field, when for several years little suitable material was forthcoming from other sources. It has therefore been abundantly proved that satisfactory clinical instruction can be given in London on the major tropical diseases, and this forms the groundwork for the general course in tropical medicine. Without the clinical aspect teaching in this subject becomes merely an academic "tinkling cymbal."

The members of the Colonial and other Government Services in India and elsewhere have to be catered for, in addition to the numerous commercial companies in Africa and other parts of the Tropics, seamen, ex-Service men, and many others.

In spite of the destruction during the recent dark years London is still regarded as the headquarters of medicine in the British Empire. Thither all critical and difficult cases have been dispatched for treatment, "blitzes," bombs, and submarines notwithstanding. Only those who have been responsible for the disposal of these unfortunates during the last six years can realize the difficulties that have had to be faced in the absence of some central institution where they could be cared for by those most competent to treat them. Had it not been for the services of the Albert Dock and Dreadnought Hospitals of the Seamen's Hospital Society this task would have been impossible. The practice of tropical medicine has become as important a specialty as orthopaedics, paediatrics, ophthalmology, or any other branch of medicine. It therefore deserves a suitable hospital worthy of the British Empire and of its immense tropical possessions. Tropical medicine has well merited support from the British Parliament and people. Achievements in this field have been of outstanding originality, both in days of peace and war, and many of the important discoveries have been made by British workers, who have done much for the security and prosperity of British possessions over-seas.

This is the essence of the present problem. A start to remedy this defect has been made by the provision of a small hospital equipped by the Seamen's Hospital Society and supported by the Colonial Office which will shortly be opened in Devonshire Street. It is to be regarded merely as forming a nucleus from which important developments may be expected in the near future. I sincerely hope that this venture will be afforded that measure of support which it so richly deserves.—I am, etc.,

PHILIP MANSON-BAHR,
London, W.1. Senior Physician, Hospital for Tropical Diseases; Consultant to the Colonial Office and Crown Agents for the Colonies.

SIR,—In his presidential address to the Royal Society of Tropical Medicine (*Journal*, Dec. 1, 1945, p. 774) Dr. C. M. Wenyon raised a matter of the greatest importance. That the facilities for the treatment of tropical diseases in this country are inadequate admits of no doubt whatever. As regards research, the importance is so obvious that it is self-evident; and although great progress has been made tropical medicine still offers an unrivalled and fruitful field for the research worker.

The need for training and research in the subject has a special claim on this country. In an Empire in which hundreds of thousands of square miles have already been rendered comparatively healthy and safe for Europeans, but which can only be so maintained by the work of men who have been specially trained, research and training should be an Imperial responsibility; and in view of future needs it is no exaggeration to say that the matter brooks no delay. There will be many doctors who in the course of their war service have "picked up" a knowledge of tropical disease which they did not possess before they joined up. But "picking up" an acquaintance is quite a different thing from the sound knowledge that comes from systematic training in it and its ancillary subjects of entomology, helminthology, protozoology, and bacteriology.

Usually the men who have trained in the subject have been those entering the Colonial Service or missionary field, or officers of H.M. Forces who desire instruction because of possible service over-seas, or who wish to specialize. There is another aspect which needs consideration. In spite of all that the public has had the opportunity of reading in the press, it

is doubtful whether the enormous development of air transport in connexion with the war is generally realized. Already preparations are being made in almost every country to cope with the large volume of air travel which is confidently expected and will certainly occur, and this may have repercussions on the clinical horizon of this country. A comparison of incubation periods and speed of travel helps one to realize the chance of meeting with diseases in this country which may be commonplaces to the tropical practitioner but obscure and puzzling to his British colleagues; yet the immediate recognition of such diseases may have a most important bearing upon the public health. The quarantine period of cholera, for example, is five days—ample time for an infected person to reach this country from the East.

In my experience the average medical student is inclined to give rather perfunctory attention to diseases of warm climates, "because we don't get them here." It is perhaps natural that he should concentrate on the diseases which commonly occur within the clinical horizon of his own country. But the time is at hand when doctors must be prepared to recognize diseases which are liable to importation, and more serious instruction in diseases of warm climates should be included in the ordinary medical curriculum. At present there are many pieces missing from the great jig-saw puzzle that goes to make up the whole of medicine. The end of a war which has been waged not only against the enemy but against tropical disease is a fitting moment for putting the treatment and teaching of the subject on a foundation befitting the needs of the Empire.—I am, etc.,

Brookwood, Surrey. H. M. STANLEY TURNER.

Leprosy Control in India

SIR,—In the *Journal* of Oct. 6, 1945 (p. 466), reference is made to the proposed improvements to the present highly inadequate methods of leprosy control in India. The necessity for this is obvious to most doctors at present serving in the Far East. During a recent leave I visited the Purulia leper colony in Bihar, Eastern India, and I was able to see for myself the tragic shortcomings of present arrangements.

The Purulia leprosarium is a large hospital run by an interdenominational set of missionaries, and is supported by voluntary contributions in the U.K. and elsewhere. It caters for between two and three hundred patients, who are warded according to the degree of the disease. Those with cutaneous leprous bullae and depigmented anaesthetic areas are ambulant and occupy a small set of bashas in the middle of the hospital; those with early gangrene and leprotic neuritis are given their own wards; and the final "arrests with deformity" when fitted with ingenious orthopaedic devices occupy their own section of the hospital. Naturally there is considerable overlap of these cases. Some distance from the hospital there is a nursery for apparently healthy children. These children have at least one parent in the colony. For all these people there is only one resident doctor, assisted by a Bihari compounder. He carries out all the routine treatment and surgery and valiantly attempts research with such equipment at his disposal. His job is an unenviable one. His facilities for research are limited, to say the least.

Leprosy is said to be a contagious disease, yet there appears to be very little authoritative control of the contagion. In almost every bazaar in India and Burma leprous beggars ply their trade. Were the activities of these people restricted it is reasonable to suppose that the disease would decrease in incidence. Furthermore, more equipment should be made available to the research workers in the isolated hospitals. These measures together with suitable "popularization" by means of propaganda should undoubtedly help in controlling further what must surely be the most ravaging disease on earth.—I am, etc.,

D. ROSENBERG,
S.E.A.C. Major, R.A.M.C.

Stethoscope versus X Rays

SIR,—I think that Dr. R. C. Hutchinson (Jan. 5, p. 31) has missed the most important point I tried to bring out in the discussion on stethoscope *v. x* rays at the Royal Society of Medicine. To put the matter quite simply, the fact is that, while detectable physical signs may or may not mean that there is active disease in the respiratory tract, the reverse is not true. It is the case that with any early disease at its most treatable stage—and this does not apply to tuberculosis alone—there may be no abnormal signs of any sort, and it is in this type of case that *x*-ray examination is vital. The five senses in which Dr. Hutchinson would apparently prefer to place his faith are unfortunately not reliable in the recognition of early disease. The student is usually taught that physical signs mean disease, but the reverse is not impressed on him. It would not be possible to claim that the standard of early diagnosis is high, and I see no prospect of improvement until the value of routine chest radiology is recognized.

Nobody would deny that physical examination has its place, but the time has come when physical examination and radiology must be brought together and teaching must be based upon the intelligent combination of all methods of examination.—I am, etc.,

London, W.1. JAMES MAXWELL.

SIR,—I read with interest the letter of Dr. R. Grenville-Mathers (Dec. 29, p. 941), but he did not mention any particular cause for his having written. I am a fairly assiduous reader of the *Journal*, but confess that I often give a miss to "Reports of Societies." Hence it was that Dr. R. C. Hutchinson's timely letter in the current issue (Jan. 5, p. 31), calling attention to the debate at the Royal Society of Medicine on stethoscope *versus x* rays, took me by surprise: indeed it makes one rub one's eyes in astonishment.

When a member of this learned Society speaks of the stethoscope as useful "to find out whether a wrong name had been placed on the *x*-ray film or the wrong side of the body indicated," and then goes on to remark that the stethoscope "still lingered in the imagination of the patient; and medical men, *even those who specialized in chest diseases*, when they themselves had chest trouble wanted the colleague examining them to listen to the chest," and "it was difficult to avoid *going through the gesture—it was not much more than that*—of trying to hear *vague mysterious sounds*," one wonders how far he voices the opinion of the medical profession. Another doctor, as Dr. Hutchinson points out, expressed the same contempt in the extraordinary remark: "Clinicians, however, should continue to use the stethoscope, *because patients expect to see it.*" When statements like these are made one may be excused for coming to the conclusion that these individuals, even though they be members of a learned society such as the Royal Society of Medicine, have never attained real proficiency in the art of auscultation. I maintain that the recognition of post-tussic crepitations at one apex in a patient seen perhaps for the first time is as valuable a sign of pulmonary tubercle as the discovery of a shadow in an *x*-ray film. Why should anyone speak of them as "vague mysterious sounds" any more than one would speak of *x*-ray signs as "vague mysterious shadows," which, indeed, they sometimes are?

If this is to become the teaching of medical students, and clinical physical signs are to be discarded as worthless, then I feel sure that the criticism by another member at the meeting that "mass *x* rays had been positively dangerous in condemning sound persons to invalidism"—a belief which I have maintained before, in the course of an animated correspondence in the *Journal* on mass radiography—will be only too well confirmed. Possibly these devotees of the *x* ray will go one step further and declare that sputum examinations are superfluous; there is good evidence that this greatest essential of all is frequently neglected. In the correspondence during very recent years on mass radiography many radiologists of highest standing have raised a warning voice on the danger of relying on *x*-ray evidence alone, and also on the need for not only an expert radiologist, but also a first-class *x*-ray apparatus (a very expensive matter) for the diagnosis of the finer appearances on *x*-ray films of the thorax. But they are like voices crying in the wilderness.—I am, etc.,

Southborough, Tunbridge Wells. E. WEATHERHEAD.

Physical Therapy in Mental Disorder

SIR,—Every right-minded psychiatrist deplores the indiscriminate use of electric convulsion therapy and prefrontal leucotomy, especially when they are employed as an escape from appropriate psychotherapy. But two facts must be borne in mind. (1) Mental disorder is not all psychogenic, nor is it

all amenable to psychological treatment. The mental symptoms of toxaemia, including alcholic toxaemia, furnish numerous examples. To treat the mental symptoms of subthyroidism by psychotherapy is just as inexcusable as to employ E.C.T. for a straight anxiety neurosis. (2) Granted that the physical methods referred to are empirical in character, the justification of their use lies in the absence of an effective alternative. I have seen cases of constitutional disorder respond miraculously after the failure of psychological treatment by competent psychotherapists (I am not referring to my own efforts). These empirical methods cannot be condemned on purely theoretical grounds as Dr. Winnicott and Dr. Bendit would contend. If psychotherapists would exercise more self-criticism they would accept their limitations in the cure of many groups of cases and frankly admit that they can offer no effective alternative to these empirical physical methods.—I am, etc.,

Harrow. H. CRICHTON-MILLER.

SIR,—Dr. Winnicott (Dec. 22, p. 901) raises an issue of great interest and importance. In his previous tirade against convulsion therapy one felt that he was tilting at windmills. Prefrontal leucotomy, however involves a permanent change in personality which is most important. It is as yet a crude operative procedure and one that may in future be greatly refined. It may well be that in a decade or so means are at our disposal for modifying, by surgery, individual aspects of the personality, and then ours will be a heavy responsibility indeed.

At present the matter is serious enough. The first case with which I was directly concerned was that of a bank manager aged 36, who had become so ridden by anxiety that extensive and carefully planned treatment quite failed to relieve his condition. Permanent invalidism or suicide was evidently destined to be his lot, and as a last resource prefrontal leucotomy was performed. His anxiety vanished, but for a time he became most careless and objectionable in his habits. This previously meticulous individual would defaecate in his toilet basin, and neglect his person if not carefully watched. After three months of intensive re-education he was able to return to his work, about which he showed no further anxiety; he has carried on successfully, but without ambition, since then. On the credit side, therefore, he is happy and reasonably productive.

In other cases I have seen similar, though less drastic, changes of personality. Patients for whom life had become intolerable through anxiety and depression are transformed into calm and cheerful people. With this alteration there goes, perhaps inevitably, a certain loss of "fineness," a coarsening of the personality which is sometimes only noticeable to the close friends and relatives of the patients.

Am I then justified in recommending the procedure? The answer which friends and relatives, and patients themselves, have given is that I cannot rightly refrain from it. When the alternative is chronic misery or death this seems the only answer possible.

We must not be blinded by the sneers of some psychotherapists, or by the highly unsound dualism between mind and body shown by Dr. Winnicott and others. There is no other procedure at present, psychological or physical, which will end for these people a life of horror. Equally we must not allow their bias to hide from us the kernel of truth in their attacks. Every psychiatrist who recommends a patient for prefrontal leucotomy is assuming a heavy responsibility. We cannot avoid—indeed we must welcome—this weapon in treatment, but we must use it with the utmost care and discretion.

I am not sure that when experience and research have improved the operation and multiplied its possibilities our task may not grow more difficult as the possibility of more precise interference with the function of personality becomes available. —I am, etc.,

The Cassel Hospital, Bucknall. C. H. ROGERSON.

SIR,—There must be many practising psychiatrists who, like myself, have, in an honest endeavour to improve the condition of their patients, indulged themselves in the "physical 'treatment' of mental illness." Before the salutary warnings against any such undertaking which have been offered us recently in your correspondence columns we are abashed and confused. I refer in particular to the considered expression of Dr. L. J. Bendit's views on electro-convulsive therapy and the operation of prefrontal leucotomy (Jan. 5, p. 31).

Suppose I am called to see a man of 55, a clerk, with a wife and four children, who has no income other than his pay and who is in a state of involutional melancholia and in consequence incapacitated from work. He is rather obese and his B.P. is perhaps a little raised—otherwise he is in good physical health. Hitherto my inclination would have been to admit this man as a voluntary patient to a mental hospital, give him a course of E.C.T., and after a short period of convalescence return him to his work and family some three of four months later. Had he relapsed I would have been surprised. Now I learn that such a course is tantamount "to taking a jar of boiled sweets which have stuck together and shaking the jar: the sweets may come unstuck, and they may change their mutual relationship, but the contents of the jar still remain the same, and, sooner or later, the unremoved moisture will result in their settling down once again into a sticky lump." This sounds horrible, and I would hate to feel that I had inflicted such a misfortune upon anybody. May I ask Dr. Bendit what form of mental dehydration—of an equal or greater efficacy—he would himself recommend?

I have in the past had the good fortune to be present at the performance of quite a large number of prefrontal leucotomy operations, and I do appreciate that it is not always easy to predetermine the precise plane of section of the leucotome. On occasion I have even seen some rather disturbing—though transient—neurological signs appear afterwards. But I would be really interested to learn where I may find, and by what criteria, neurological or otherwise, I may recognize, what must be the truly alarming spectacle of "more or less decerebrate robots let loose."—I am, etc.,

Wonford House Hospital, Exeter. JOHN A. AINSLIE.

SIR,—Dr. D. W. Winnicott's warning admonitions (Dec. 22, 1945, p. 901) are laden with such quixotic quality and bias that they easily become misleading. Judging by his letter, psychiatrists may appear as "Jack the Brain-slashers," anxious to maim indiscriminately "healthy" brains. The laudable attempt to fight such "monsters" turns out, however, on closer examination of the facts, and after reading the relevant literature, to be the mirage of a vivid imagination. No responsible psychiatrist recommends leucotomy in a patient before all other methods of treatment, including, of course, psychological ones where possible, have been tried and found to be of no avail.

It is easy to philosophize about the mind and appoint oneself as the champion of the mentally ill, but to treat the awful tragedies of insanity in a mental hospital is a different matter. Is it warranted to condemn wholesale physical methods of treatment in mental disorder because they are empirical? Should malaria treatment in G.P.I., for example, be put on the "Index" also, the scientific rationale being as unknown as it is for insulin treatment of schizophrenia? Are obsolete metaphysical assumptions of body–mind dichotomy sufficient to warrant in established forms of schizophrenia, cyclothymia, etc., the hypothesis of an exclusively or predominantly psychological aetiology? This is not to disparage the imperative necessity for psychological studies in the childhood-environment psychodynamics of insanity.

Nobody underestimates the scope of child guidance and social betterment as a possible prevention of a deranged emotional background and development. Freud's immortal discoveries shine undimmed in their brilliance. Certain epigones too easily forget, however, that Freud was an empirical natural scientist, and didn't believe in a mind somewhere outside the body. He wrote, for instance, "The possibility is by no means excluded that in some future time a 'syringe' shall cure mental illness." What a sacrilegious statement for the "pure-mind" mystics! Freud stresses the point that there exists a hard core of insanities which are beyond the reach of psychological treatment. Physical treatments are reserved for these.

What are Dr. Winnicott's experiences, and where are comparable statistics available which would show how many schizophrenics, paraphrenics, involutional melancholics, cyclothymics, have been "cured" by psychological treatment alone? In his letter Dr. Winnicott seems to advocate implicitly a return to the therapeutic nihilism of the asylum days, at any rate until the psychological subtleties of a preconceived *a priori* aetiology are cleared up. Should the utter dissipation of the personality, say, in a nuclear schizophrenia, or the sufferings of melancholia, be in the meantime witnessed passively by doctors in an awe-struck trance, as the morbid revelations of the mind? Unimpeachable evidence from most

reliable and numerous authors shows the reduction of duration in hospital as a result of physical methods of treatment, and a much higher incidence of remissions than those spontaneously occurring in the major form of psychosis.

The results of leucotomy have been published by authorities in the field of clinical psychiatry (Freeman and Watts, Golla, Fleming, Mayer-Gross, Sargant, Slater, among others). They all report social recoveries in a number of otherwise hopeless cases. Is it permissible to disregard these findings? Does Dr. Winnicott prefer that a patient should linger helplessly deluded in hypochondriacal misery and haunted by psychotic fears after years of futile and unsuccessful psychological treatment, rather than that he should recover social efficiency and happiness after leucotomy?

The lack of depth in the personality, a plainness of emotional response, some affective asymbolia in the recovered post-leucotomy cases, has no sociological consequences in comparison to the turmoil caused by psychotic catastrophe. After witnessing the cataclysm of a mass psychosis—without leucotomy—in Hitlerite Germany, isn't Dr. Winnicott's fear about the "capacity to vote" in recovered patients much ado about nothing? In more than 230 cases in which leucotomy was performed in this hospital the results—shortly to be published—amply justify this method of treatment in certain types of mental illness, confirming the findings of others. We were, as everybody else is, most anxious, however (in this I agree with Dr. Winnicott), not to include among the "victims" the rare "creative cranks." Psychopathic personalities in geniuses like Proust and van Gogh are not so easily overlooked by up-to-date psychiatric investigations as Dr. Winnicott assumes.

The triumphs of physical treatment in mental illness are so overwhelming that no "antibodies" of the "antivaccination" type, no "League against Leucotomy," will be able to prevent or hamper the progress of clinical psychiatry.—I am, etc.,

Graylingwell Hospital, Chichester. JAN FRANK.

Paraesthesias

SIR,—In his article "On 'Acroparaesthesia' and So-called 'Neuritis' of the Hands and Arms in Women" Dr. F. M. R. Walshe (Nov. 3, 1945, p. 596) states, referring to my works on the subject of paraesthesias: "The remedy proposed by Wartenberg, however—namely, division of scalenus anterior—is not recommended, as being unnecessary and, when performed, usually fruitless." This is not correct. I said about this operation: "It is therefore quite justifiable to consider this operation in stubborn cases of brachialgia statica paraesthetica."

In both my articles in 1936 and in 1944 it was stressed that the course of this disease is an exquisitely chronic one with remissions, intermissions, and a tendency toward spontaneous recovery. "The whole symptomatology indicates a reversible process that does not lead to structural changes." In a few stubborn cases of brachialgia statica paraesthetica, in which the complaints persisted for years, I considered, indeed, the operation of scalenus anticus, but never had an opportunity to see the operation carried out. This attitude of mine is far from "proposing" this remedy, as Dr. Walshe presumes that I have said. I would appreciate the publication of this necessary correction.

University of California Hospital, San Francisco. ROBERT WARTENBERG.

Hospital Service

SIR,—May I be permitted to subscribe whole-heartedly to those considerations outlined in the joint letter of Sir Hugh Lett and Dr. Russell Brain (Dec. 29, p. 936) in regard to the availability of hospital treatment and the services of specialists and consultants to patients who might have difficulty, through financial reasons, in deciding what course they should pursue.

I feel it incumbent upon me to point out, however, that while the Hospital Service Plan of King Edward's Hospital Fund covers persons resident in the London area, similar benefits are available to persons resident in the Provinces and Scotland through the Central Provident Association. The Nuffield Provident Guarantee Fund guarantees the financial solvency of the Central Provident Association as well as the Nuffield Ulster Provident Association which operates in Northern Ireland. The head office of the Central Provident Association is 16, King Edward Street, Oxford, and particulars of contributions and benefits would readily be supplied to doctors and other interested persons on application to the secretary.—I am, etc.,

EDMUND C. BEVERS,
Oxford. Chairman, Council of the Central Provident Association.

A Fundamental Principle

SIR,—Your footnote to my letter (Dec. 29, p. 936) compels a reply. I have not suggested, nor seen it suggested, that doctors established in one place should be required to move to another. To many, however, it has come to seem as urgently necessary to provide a good medical service for the working people of this country in peacetime as it is to provide such a service for the same people when they are employed in the armed Forces in a war. To ensure such a service the direction of a proportion of the new entrants to the profession is likely to be necessary at first. If men will not now go where they are most needed—largely because the conditions of life and practice are so inferior in many of our cities and towns and some rural areas—then (*a*) the conditions of practice there must be improved, as they best could be in an organized service employing whole-time doctors; and (*b*) if men will not then volunteer (and presumably there will be options) in sufficient numbers for certain areas some will have to be posted, just as they are already posted in the Services and the Colonies. Increasing the number of doctors and "making medicine an attractive profession" will not necessarily ensure the equitable distribution and the efficient service which we should all wish to see. Such a service could enlarge rather than contract professional freedom in backward areas.—I am, etc.,

Oxford. JOHN A. RYLE.

SIR,—I have always been impressed by Prof. J. A. Ryle's angle of approach to medical service and conditions of service, and with his views I have always found myself in complete agreement. His letter printed in the *Journal* of Dec. 29 is no exception.

But with regard to the clause (obviously Clause IV, not Clause VI) to which he refers, the question arises in my mind as to when or how far the majority of doctors have ever been free, in any case at the outset of their careers, to choose the form, place, and type of work they prefer. I agree that the Editor's note appended to Prof. Ryle's letter does suggest a remedy, but only at the cost of direction—direction of the sufficiency of doctors when obtained into the places not so well supplied, and presumably not so attractive.

Now that the reorganization and improvement of the health services of the country has become a recognized necessity no scheme towards this end is worth considering if it does not include as a major objective the fair distribution of medical personnel and equipment throughout the community. This will probably necessitate the whole country being divided up into areas or districts, for each of which a maximum and minimum quota of general practitioners, specialists, and hospital facilities will ultimately have to be established, and the very filling of these quotas may offer a wider choice and more freedom of choice to all members of the profession than does our present system.—I am, etc.,

New Buckenham, Norfolk. R. G. BLAIR.

SIR,—The miners are not directed to work in mud or in water, but an extra allowance is made to those of them who have to be so employed. Prof. J. A. Ryle (Dec. 29, p. 936) is not prepared to concede the same principle to the medical profession. This would appear to be an example of class discrimination.—I am, etc.,

London, W.1. GEOFFREY BOURNE.

The Industrial Nurse

SIR,—In view of the considerable interest at present being taken in industrial nursing I shall be glad if you will permit me to comment on certain statements made by Dr. T. R. Aynsley in his letter (Dec. 15, p. 865), in which he appears to infer that industry is overflowing with State-registered nurses who could be better employed elsewhere, and that these nurses are "enticed or directed" to these posts. The facts are that for the past two years the Minister of Labour has been directing State-registered nurses out of industry into other fields considered more important. They have been replaced by assistant nurses and first-aid attendants. According to the report of the Chief Inspector of Factories for 1944 about 7,000 female nurses were employed in industry, and of these only 50% were fully

trained. Furthermore, midwives, tuberculosis nurses, Queen's nurses, and those holding health visitor's certificates have been forbidden to take industrial posts except in special circumstances. Dr. Aynsley may rest assured that the Minister of Labour in his survey did not leave State-registered nurses in industry unless he was satisfied that their skill and training were fully utilized, or that for various reasons they could not be usefully employed elsewhere.

Those with knowledge of the infinite variety of serious and potentially serious trauma and of the other health hazards in industry agree that the services of trained nurses during the war have been of the greatest possible value to our industries; we should be foolish indeed if we shut our eyes to this in view of the strenuous industrial effort required of us in the future.—I am, etc.,

London, W.16. W. BLOOD, Chairman, Association of Industrial Medical Officers.

Purpuric Type of Textile Contact Dermatitis

SIR,—In the discussion on D.D.T. (Dec. 29, p. 933) I was interested to read Lieut.-Col. F. F. Hellier's remarks concerning the purpuric type of textile contact dermatitis apparently associated with the wearing of shirts impregnated with D.D.T. His statement—"The striking fact was that this extraordinary rash was something new to the B.L.A., it did not appear elsewhere, and the B.L.A. was the one Force which had gone out with impregnated shirts"—is not quite accurate, as I myself encountered many cases exactly similar occurring in soldiers serving in the C.M.F. Like Lieut.-Col. Hellier, I also suspected that the eruption was due to the impregnation of shirts with D.D.T. I discovered, however, that some of these patients had not been wearing shirts which had been impregnated, but that it never occurred in men wearing khaki drill shirts and was practically always seen in men wearing the woollen shirt with collar attached—i.e., the American olive-drab. Patch tests to the textile were positive, but negative to D.D.T. powder, while all other tests, such as the capillary resistance and blood examinations, were negative.

I have been informed by Dr. T. E. Anderson that in Scotland he saw similar cases in soldiers, and only last week a merchant seaman reported with a very similar eruption, apparently due to a new pair of blue dungarees. In his case there seemed no possibility of contact with D.D.T. in any form.—I am, etc.,

Edinburgh. G. A. GRANT PETERKIN, M.B., F.R.C.P.Ed.

Spinal Analgesia

SIR,—It is very surprising that Mr. W. A. Fairclough (Dec. 8, 1945, p. 801) has been able to find ten cases of external rectus paresis following 2,021 spinal analgesics in a period of eighteen months. His figures certainly give an erroneous impression of the frequency of this particular complication, and I think it unlikely that the injection of the analgesic agent alone can have been responsible.

My experience of spinals extends for fifteen years. I have given all injections myself, and the convalescence of all patients has been under my personal supervision. I saw three cases of external rectus paresis in the first three years, when a variety of solutions were used—"stovaine," "spinocaine," and 1/1,500 "nupercaine." One of the cases followed the injection of "nupercaine" and all cleared up rapidly. Since then I have used 1/1,500 "nupercaine" exclusively with increasingly rigorous attention to the preparation of syringes and needles. No external rectus paresis has occurred in a total of over 3,700 spinals given during twelve years, and the complications suggesting meningeal irritation have been few.

The reports of catastrophes that have followed spinal analgesia seem to indicate that concentrated solutions are more liable to cause trouble. I think, however, that meticulous attention to the physical cleanliness of the apparatus is nearly as important as the selection of the solution if failures and complications are to be avoided. Absolute asepsis is, of course, assumed.

The enthusiasm inspired by the admirable operating conditions which spinal analgesics create must be tempered with a full appreciation of the very serious risk that attends their use in unsuitable cases. The risk is connected with the fall in blood pressure which occurs in every case (not necessarily in proportion to the dose used or the area of analgesia produced), and the extreme variations in the capacity of patients to withstand it. Many cases of hyperpiesia, renal insufficiency, and late peritonitis or obstruction with marked distension react very badly; and the use of spinal analgesics in such cases will provide deaths on the table. Elderly patients with arteriosclerosis are likely to develop cerebral thromboses, either on the table or within 24 hours of the operation.

I think that the doses advised by Mr. McNeill Love (Dec. 22, p. 897) are rather small. They will work, no doubt, in most cases, but an irritating number of partial failures may occur which can be avoided by larger injections without increased risk. I give 17 to 18 c.cm. for all upper abdominal operations, and up to 20 c.cm. if the back is unusually long. A reliable dose for the lower abdomen is 14 c.cm., and smaller amounts may be used for the legs and perineum. On four occasions satisfactory analgesia failed to develop after injections of 14 to 18 c.cm., which presumably went into the epidural space. After waiting about twenty minutes the injection was repeated in each case with completely satisfactory results. One patient received 36 c.cm. and two others 32 c.cm. at one sitting, so I am inclined to discount the absorption of percaine as an element in collapse or complications.—I am, etc.,

County Hospital, Cashel, Co. Tipperary. C. R. BOLAND.

Choice of Anaesthesia

SIR,—As regards choice of anaesthesia in abdominal surgery, apart from considerations of type of patient and operative requirements, this can be broadly classified according to the state of the patient, as follows: (*a*) fit for spinal, general, or local anaesthesia; (*b*) fit for general or local anaesthesia; (*c*) fit for local anaesthesia.

If the operative procedure merits its use, the surgeon should be given the choice of spinal analgesia. However, I think it quite wrong to try to persuade a surgeon, who has no enthusiasm for it, to accept spinal analgesia when an alternative technique can be equally well employed. (The surgeon's peace of mind during the operation is quite as important as, if not more important than, that of the anaesthetist.) On the other hand, when the surgeon states a preference for spinal analgesia he should be prepared, if necessary, to adapt his technique to suit the special requirements of the situation—e.g., gentle handling of the bowel and guarded conversation. Although the necessity for the latter is not present when a light, first-plane, general anaesthesia is induced, this may not always be desirable or practicable. The choice of the particular spinal analgesic to be employed, provided the surgical needs are satisfied, should rest with the anaesthetist. In the event of the surgeon demanding a particular analgesic agent which the anaesthetist conscientiously feels is contraindicated, then the surgeon should be prepared to administer it himself, and to accept all responsibility for any untoward event connected with its use.

Almost invariably in practice one finds that the surgeon is only too willing to leave anaesthetic matters to the anaesthetist, so that he may be free to give all his attention to the operation. Where there is proper team-work and understanding between the surgeon and his anaesthetist, the choice of the anaesthetic can usually be arrived at in a manner satisfactory to both parties, and this must redound to the advantage of the most important person concerned—namely, the patient.—I am, etc.,

Glasgow. KENNETH C. GRIGOR, Anaesthetist, Southern General Hospital.

Shock and Open Ether

SIR,—After reading Dr. Arthur Mills's letter on shock and open ether (Dec. 29, p. 938) I spent a leisure hour breathing through a Coxeter-Mushin closed-circuit machine with a basal oxygen flow of 500 c.cm. My pulse varied between 72 and 68 and my respirations between 16 and 14. My B.P. was not taken. I experienced slight discomfort towards the end due to the pressure of the face-mask, but otherwise no untoward effects during or after the inhalation. This is not surprising, as anaesthetists experienced with shocked cases assure us that the technique affording the best results is the closed-circuit using N_2O and O_2 with a high percentage of the latter and adding minimal quantities of cyclopropane if required. If the

breathing becomes unduly shallow the CO_2 absorbed can be partially or completely cut out of the circuit for a while. Furthermore, the technique for shocked cases should be adaptable to special requirements such as endotracheal administration and controlled respiration, and this is not possible with open ether.

If, however, ether and air is to be the first choice, is not the Oxford vaporizer the most accurate and most controllable means of administering it? The air can be enriched with oxygen through the special tap provided, and if the correct size of face-piece is chosen and correctly applied there is a gas-tight joint with no danger of hypotony and with both eyes readily accessible for inspection and, if deemed necessary, for palpation. Few, however, are the anaesthetists who elicit the corneal reflex these days, and even fewer are the ophthalmologists who would give the practice their blessing.

With regard to the use of ether, there appear to be two sharply divided schools of thought among most anaesthetists and some surgeons. In the one ether is condemned and never used, while in the other it is the agent of choice. It may be helpful if both sides aired their views in the light of experience and up-to-date knowledge, and an authoritative and unbiased pronouncement made.—I am, etc.,

W. N. ROLLASON,
Fl. Lieut., R.A.F.V.R.

Haverfordwest.

Frequency of Micturition after Injection of Haemorrhoids

SIR,—Dr. Kenneth Hazell's case of haematuria following an injection of haemorrhoids (Dec. 15, 1945, p. 864) calls to mind several patients that I have seen who developed disturbances of micturition after the same procedure. I can recall three such cases. They all complained of the onset of frequency of micturition within a few hours of the injection; in one case the symptom began within fifteen minutes of this treatment of piles; in another there was terminal haematuria and dysuria as well as frequency. I regarded all these instances as evidence of the connexion, through either the venous or lymphatic system, between the lowest segment of the alimentary canal and the neck of the bladder. It is possible that Dr. Hazell's case is explicable along similar lines.

Probably a reversed process is demonstrated in the frequent incidence of piles in patients suffering from bladder-neck changes even without obstruction, or with different forms of posterior urethritis. I have seen many cases in which haemorrhoids have followed the above-mentioned urinary-tract conditions.—I am, etc.,

H. P. WINSBURY-WHITE.

London, W.1.

Varicose Ulceration

SIR,—I am glad to have seen so many letters in your correspondence columns lately on this subject. Apart from the few people who have specialized in varicose veins and ulceration, this subject has been sadly neglected by the average run of the medical profession.

I see on an average 50 cases of ulceration per week—cases sent to my clinic by other doctors. I have been appalled by the number of years that each individual patient has suffered from his ulcer before I see him. These patients have attempted under medical supervision to get their ulcers healed merely by the application of ointment and a silly piece of bandage just around the ulcer.

Unless the pathology of these ulcers is understood cure will never result. The primary causation of these ulcers is gravitation, and the only treatment that will effect the healing of the ulcer is to rid the limb of its congestion. It is therefore essential to study each limb individually, and, if necessary, to get rid of any causative or concomitant veins, either by appropriate injection or, in a few instances, by ligature of the internal saphenous vein where it enters into the deep femoral vein, together with the ligaturing of the five branches of the internal saphenous vein in that neighbourhood. In long-standing cases the injection or the ligature, or both treatments combined, will not, however, get rid of the brawny, oedematous swelling. This can be effected either by the unnecessary and absurd treatment of putting the patient to bed for three months or by tight bandaging with "elastoplast." I am aware that there are a few cases which will not tolerate "elastoplast" next to the skin, but this difficulty is overcome as stated below.

My own technique in every case of ulceration is to apply "jelonet" to the ulcer base—occasionally in addition a sulphonamide powder; on top of that the whole leg from the toes to below the knee is enveloped in "ichthopaste"; then a pad of sponge-rubber with well-pared edges is applied over the ulcer and sometimes even several pads lying built-up over the ulcer. Then more "ichthopaste" is applied, and finally "elastoplast" is applied with a back stirrup so as to prevent the lateral subsequent turns of "elastoplast" from cutting into the leg. Moreover, this "elastoplast" is applied from above downwards to prevent the rucking up of the "elastoplast" by the stocking which would occur if it were applied from below upwards. Incidentally, this dodge was taught to me by my friend Mr. Dickson Wright.

The usual story in these cases is to get an ulcer which has been existing for six years healed in two or three months, the bandages being changed on an average once a month. Once the ulcer is healed up, however, there arises the question of after-care of the ulcerous leg. Even when all possible has been done for the vein by injection and/or ligature as above described it is necessary that the patient should keep the leg supported for many months ahead, or even for the rest of his life, either by the daily application by the patient of an "elastocrepe" bandage with a pad over the old ulcer site, exerting pressure, or, in less serious cases, by wearing an elastic stocking. I always tell patients also that standing is bad and walking is good, and to put their legs up in the evenings at home whenever possible on the sofa rather than have them dangling down.—I am, etc.,

STUART MCAUSLAND.

Liverpool.

SIR,—With reference to previous correspondence on this subject, I feel that Dr. R. K. Brooks and other G.P.s who do likewise should be commended and encouraged to print their methods of treatment and experiences, as in this way the standard of general practice can be raised by helpful and accurate criticism from experts. On the contrary, there are some who see in such letters an occasion to deride and correct, and in this case in a manner which is only less accurate and useful than it is courteous. If consultants and others engaged in hospital practice were to engage in general practice for a few weeks from time to time many would learn a great deal worth knowing, apart from tolerance.

The subject can be summarized as follows: The treatment of varicose ulcers is primarily the treatment of an area of nutritional gangrene, and secondarily the treatment of the accompanying varicose veins. The predisposing cause: lack of venous drainage, and thus lack of adequate blood supply; exciting cause: usually a blow causing an abrasion and permitting entrance of bacteria; these latter proceed to destroy the devitalized area until better-nourished tissue is reached.

Treatment: (*a*) To increase the nutrition of the part affected by promoting venous drainage; (*b*) to apply non-irritating bacteriostatics, for, as every medical schoolboy knows, sepsis is a potent barrier to repair. Venous drainage is promoted by: (1) elevating the limb; (2) supporting the limb with elastic bandage or stockings, etc.; (3) thrombosing or removing the varicose veins to the full extent of the defective system concerned, provided the deep venous system—supported as it is by muscles, fascia, etc.—is patent and healthy.

The method or methods adopted will depend upon the age, condition, and circumstances of the patient, but it is useless injecting veins in an ambulatory patient with a positive Trendelenburg sign—that is, a saphenous vein which fills from above when the patient assumes the erect position. In such cases the saphenous must be ligated and a portion excised at its entrance to the femoral vein. Furthermore, never inject a varicose vein in the region of the knee-joint. Finally, the elastic stocking is a valuable measure against recurrence of a healed ulcer and in treatment of varicose veins generally.—I am, etc.,

JOHN F. JENKINS.

London, W.1.

SIR,—In the treatment of varicose ulcers there are three conditions to which attention must be paid: (1) venous stasis, (2) lymphatic stasis; (3) infection. All three must be treated before lasting cure can be obtained.

I have treated several thousand cases in the past fifteen years, and so far I have not failed to heal an ulcer, at least tem-

porarily. Some, alas! return years after with an ulceration in the old scar, generally from an injury, and these are the most difficult of all to cure. I still use the injection method for varicose veins, using Maingot's "twin" injection of lithocaine with quinine and urethane for large veins. With proper technique this gives excellent and lasting results. One injection at the saphenous opening will usually sclerose the whole of the internal saphenous vein as far as the ankle. For smaller veins I use "etalate."

For lymphatic stasis one must employ a bandage. But it is dangerous to apply an adhesive bandage directly to an ulcerated leg, for allergic dermatitis is sure to occur sooner or later and this may spread to the whole body. I apply an "ichthopaste" bandage from the foot to the knee. This must be very smoothly applied, letting the bandage run in the direction of its longitudinal fibres, and taking a half-turn when it is desired to bring it down the leg again. This is covered with a crêpe bandage, equally smoothly applied. The bandages are changed once a week or even once a fortnight, but the crêpe may be taken off for washing and a clean one applied by the patient if there is much discharge. As to local applications to the ulcer, I find that paints, lotions, and watery pastes are superior to ointments; of the paints I use 10% aqueous solution of brilliant green largely, but I also use triple dye and crystal violet in varying strengths. Sulphanilamide powder and sulphomerthiolate powder are useful if the ulcer is very dirty, but, as Dr. R. K. Brooks observes (p. 816), they cause an increase in the discharge and must be used with caution.

Finally, I believe that there is no cut-and-dried line of treatment which can be relied upon to cure every case. Each must be treated on its merits, or demerits, and only long experience can decide when a change of treatment is necessary. But if the above fundamental principles be followed, success will always be attained.—I am, etc.,

London, S.W.7. R. SIMPSON HARVEY.

⁂ This correspondence is now closed.—ED., *B.M.J.*

Questionaries, Past and Future

SIR,—I welcome the splendid suggestion contained in the excellent letter from Dr. R. Ritchie (Jan. 5, p. 33). I hope and urge that the matter of a fresh and unambiguous questionary, on the lines suggested by him, be taken up at once, with one additional and all-important question—namely, "Will you pledge support for the Negotiating Committee to stand firm on its 'Basic Principles'?" I have no doubt that if this is done the answers will show a vast majority of medical men to be strongly against the sort of service implied by the recent remarks of the Minister of Health.

The arrangements could easily and speedily be carried out by the secretaries of Divisions and the Central Medical War Committee. If it is to be done, it must be done at once, so that the profession can make a clear-cut decision and give its representatives a strong lead. This is needed because of the conclusions that can rightly be drawn from the remarks of the Minister. By implication our patients are to have a "free service given by directed doctors, whose compensation will be for public work only, though their private practices will, in fact, be stolen. And they will be tied to a service with a pittance of a pension, which they must either accept and go in, or reject and stay out. Their patients will be forced by high taxation, high rates, high cost of living, and payments for the cost of the new service, to accept it under financial duress, and few will be able to afford to stand out. This is the first move in the direction of nationalized medicine that will lead eventually but inevitably to the servile state. If we are united on our basic principles we can not only withstand the onslaught but produce a far better service for the people. Now is the time: let us wake up and stand up and fight for the freedom of our patients and our own integrity and just dues.—I am, etc.,

Caversham, Reading. S. F. LOGAN DAHNE.

SIR,—The excellent letter from Dr. Robert Richie is most timely and one can only hope may meet with the support it deserves and stimulate the practising profession to take effective action.

The course of events preceding the return of a new Ministry was sufficiently depressing and disheartening. What has happened since has filled us with despair. Most of us who struggled to take some active and effective part in the discussions and formulation of recommendations by the Negotiating Committee were sufficiently sickened by the policy of appeasement which permeated and undermined all attempts to present a united and determined front. At best "recommendations" and "suggestions" were put forward with a nauseating humility and deference for the consideration of the Minister of Health. At least this much was accomplished. Since the advent of the present Government the whole of even this little that had been done has collapsed like a pricked balloon. There are now no signs of any organized attempt to project and uphold what we know to be not only in the best interests of the public and profession but also matters vital to the very existence of our individual selves as the "working class" of the profession. The dictatorial pronouncements of the Minister of Health go unchallenged. Our apathy and ineptitude are in line with the same qualities displayed by the Opposition at Westminster. We have no programme or, if we have any, we seem to have no energy to put it into effect. It would seem that we have been beaten to the ropes and have thrown up the sponge. All and any dictatorial measures the present Government may think fit to introduce will go by default. We shall shortly be presented with a *fait accompli*, a very favourite method of dictators, and we shall be left to bemoan our Munich.

Dr. Ritchie very ably points out that there is no longer any doubt as to the Government's programme and intentions, and the time is now more than ripe for the profession to take a firm stand on fundamental principles and to answer "Yes" or "No" without fear or favour. Why this chicken-hearted fear of the emphatic "No"? Let us follow the example of New Zealand and refuse absolutely to co-operate unless our minimum demands are met. The result there was that the Government had to withdraw and think again. The questionary suggested by Dr. Ritchie would bring us out of the fog of irrelevant detail which has hitherto choked any attempt to arrive at an emphatic statement of minimum demands or fundamental policy into the sunlight where at least we shall know where we are, as well as making it clear to the present Ministry that we refuse to be trifled with. Even if we are ultimately defeated (I do not think so), at least we shall have regained something of our self-respect.—I am, etc.,

Oxford. J. FRANKLAND WEST.

Domiciliary Midwifery and the Family Doctor

SIR,—Unless some such scheme to fuse the traditional functions of the family doctor and maternity hospitals, as suggested in the interesting letter by Mr. Arthur E. Brown (Jan. 5, p. 30), is speedily put into operation in this country, the further participation of the family doctor in midwifery will soon come to an end.

The trend towards institutional midwifery is now established and permanent; because the medical attendant realizes that no confinement can be trusted to be normal until it is safely over, and therefore appreciates conducting all cases under first-class conditions; the patient, in addition to the relief from domestic worries, realizes that an expert team and constant trained attendance are necessary for carrying out modern methods of analgesia and successful care of an abnormal case.

General-practitioner hospitals have been suggested in connexion with the new hospital service. Midwifery is surely a field in which they could be used to advantage under conditions described by Mr. Brown. Most patients would prefer to be attended by the man they know and who knows them, and who has attended them during the antenatal period; but, for lack of any alternative, more and more cases are being absorbed into large maternity hospitals, where they are not attended by a doctor. The general practitioner is thereby robbed of his midwifery, the very bed-rock of family practice, and is soon to be classed as incompetent to practise obstetrics in the new era. The pace of this will increase as further development of maternity hospitals closed to the general practitioner is planned, on a large scale, for rural and urban areas.—I am, etc.,

Warrington. R. GUEST GORNALL, M.D.

Venereology

SIR,—I read with interest Lieut.-Col. Henry Richards's letter (Sept. 22, p. 414) denouncing the use of the word "venereologist," and I read Brig. T. E. Osmond's reply (Oct. 20, p. 556) with sympathy. As the latter says, many medical terms in common use are hybrids and mean something different from what would appear if their component parts were analysed. The unclassical word "antibody" has been made a classical example by the scorn of Quiller-Couch. It is a hybrid and does not refer to a substance which opposes or does harm to the body. It is, however, useful, and it has, moreover, remained. As a hybrid myself, being an obstetrician and a gynaecologist, I feel more than a little sympathy for other hybrids, even if they have not become members of a Royal College. Harmless and necessary, like Shylock's cat, are various hybrid vegetables and flowers, mules, and the English race. The recent attempt to erase the last from the face of the earth should give pause to all who would attack such hardy creatures or eliminate such words.

As for its inaccurate meaning, venereology is no worse than "gonorrhoea," the purulent discharge of which does not proceed from the gonads, but which, as a word, is quite respectable and has remained unchallenged. If "venery" means the arts of love we cannot doubt that during the pax Romana they were not always respectable. In the many mansions which the temple of Venus contained there must surely have been one for those who suffered from their venery. Surely, therefore, a man may study any of the various manifestations of venery and be rightly accounted a venereologist.

The English language has never endured for long the lack of a useful word. It has stolen and changed without shame and, be it added, without detriment. It can do no harm, however, to explore the possibilities of a change, provided they are for the better—that is, not hybrids and not inaccurate. "Specialist in venereal disease" certainly could not be mistaken for an expert practitioner in the arts of love *par excellence*, but the purists, whom we have to satisfy, might think he specialized in contracting rather than in curing these diseases. "Officer with a special knowledge of the diagnosis and treatment of venereal disease" is perhaps a little cumbersome and comes not trippingly off the tongue. Shall we have a synthetic word like "Nazi," "Seac," "Ensa," or "Unrra"? From "Medical officer with special knowledge of venereal disease" we have "Moskovend." I doubt if this would leap into favour, and the less knowledgeable, who probably form the bulk of a "moskovend's" clientele, might think a "moskovend" was a Russian with something to sell. "Pox doctor" has been tried and found wanting, and, further, is inaccurate, as such medical officers do not necessarily teach. For India "pox wallah" could supplant the inaccuracy of "doctor," but one would have to mind one's "p's" and "b's" to avoid offence to the business community who are unfortunately often referred to as "box wallahs." It is unfortunate that the Greeks had no god who suffered as we mortals do. Perhaps Priapus, son of Aphrodite, did but kept the matter quiet. Lacking information and the means now of obtaining it, could he not be "deemed" to have had all possible venereal diseases—*honoris causa*, as it were? We could then call venereologists priapologists, leaving those who object to the former term to apologize for any confusion which might arise among those who regard priapism as Priapus's most distinctive feature. Until this or a better term is established I must confess that I shall use venereologist. I do not mind its being a hybrid, and venery nowadays is more of a misfortune than an art.—I am, etc.,

G. BENION THOMAS,
Major, I.M.S.;
Professor of Midwifery, Madras Medical College.

"Chronic Ear Disease"

SIR,—In their note on penicillin in chronic ear disease Surg. Cmdr. R. L. Kennedy and Surg. Lieut. J. W. Boland (Jan. 5, p. 13) seem to have classed together in one group the following separate ear diseases: (1) otitis externa with an intact tympanic membrane; (2) otitis externa in an ear with a dry perforation of the tympanic membrane; (3) otitis externa associated with suppurative middle-ear disease; (4) suppurative middle-ear disease. Their record would be of more value if each of these diseases had been described separately, and in the cases with perforations of the tympanic membranes I should like to know the site and size of each perforation. I should think that aurists will be astonished at this innovation, or perhaps retrogression, of classifying so many separate pathological entities as "chronic ear disease."—I am, etc.,

Gloucester. C. DE W. GIBB.

Paracentesis and Myringotomy

SIR,—I read with full appreciation Mr. T. B. Jobson's observations (Jan. 5, p. 21) on the terms "myringotomy" and "paracentesis." Being rather insistent on accuracy, I have for years impressed upon house-surgeons and others that the correct term for the operation designed to drain the middle ear is "myringotomy," the less satisfactory alternative being "paracentesis tympani" but not "paracentesis" alone. Mr. Jobson's interesting account of the derivations of the words will, I hope, help to correct an irritating slackness in terminology.—I am, etc.,

Birmingham. W. OGILVY REID.

SIR,—The question of what to call the small operation of puncturing the drum of the ear with a bent hypodermic needle on a syringe is, as Mr. T. B. Jobson says, most interesting. May I discuss one or two points in it?

The word myringotomy (cutting the drum), says the author, appears first in 1863 and again in 1875. Myringa is, he says, "a modern Latin word," meaning a membrane. To me its appearance and sound suggest very strongly its Greek descent. Compare syringa, used as a name for the lilac genus. This is derived from the Greek word syrinx, meaning a tube or syringe, and it is applied to lilac on account of the shape of the flowers. Syringitis (inflammation of the Eustachian tubes) is derived from the same word. I have a medical vocabulary by Dr. Fowler, published 1875, which gives the word myringitis but not myringotomy. It gives the derivation of the word myringa as a barbarism for membrana tympani. It would not, I agree, be right to call the operation myringotomy, as it is not a cutting of the drum.

It is suggested that the operation should be called "paracentesis" (a piercing through), a word some 2,000 years old or more. The verb "parakenteo" (para = through, and kenteo = I pierce) meant in those times "I tap for dropsy." The "para" does not give the idea of piercing completely or right through, so I suggest that the Greek word "dia" would be better, giving us diacentesis, as the needle passes completely through the drum. I suggest the name for the operation should be syringo-myringo-diacentesis, or for busy otologists S.M. diacentesis. A syringe has two functions—to eject or withdraw fluid—so that the name I venture to propound tells us what is done and how.—I am, etc.,

Guildford. J. K. MILLIGAN.

"Cord Round the Neck"

SIR,—May I try to lay another small tree in the forest of obstetric superstition? During the past few months I have heard of four cases of stillborn babies in which the death or stillbirth has been attributed to the "cord being round its neck." In all my years of obstetrics I have complacently accepted this explanation, but is it wholly, or even partly, true? It is certainly a facile excuse and one meekly accepted by the bereaved parents.

Presumably the foetus dies from asphyxia because the cord is so tight around its neck that it cannot breathe. This explanation is completely untenable for two reasons. First, the constriction can be removed before the baby even attempts to breathe, and, secondly, the rings of the full-term trachea are harder than the cord, and so it must be the cord which is compressed, not the airway. This brings me to the other explanation generally given—that the foetus dies because the placental blood is prevented from arriving through a compressed or stretched cord. It does not become stretched because the uterus and placenta descend with the foetus. What compresses it? Not its own coiling, for were that so the foetus must have died long before; not its passage through the pelvis, for it is protected by the head. To say that it is pressed on by the chin in flexion is to stretch credulity too far.

I can understand intra-uterine amputations caused by a loop of cord or even intra-uterine death (DeLee gives a picture of one), but I cannot see why the coiling of the cord round the

foetal neck should cause stillbirth. Although the argument is unscientific, all of us have delivered many live babies with one or more loops of cord round the neck. I personally have never had a stillbirth from this cause. In the four cases I have mentioned one infant died undoubtedly from toxaemia, one from an attempt to turn a breech under deep anaesthesia, and the histories of the others were incomplete. I do suggest, therefore, that we might review our ideas on this subject, and the diagnosis of "cord round the neck" should be regarded with grave obstetric doubt.—I am, etc.,

London, W.1. MORTIMER REDDINGTON.

Case of Adder Bite

SIR,—I was interested to read some correspondence in your columns a little while ago about adder bites. It seemed that the number of recorded cases was small, and it may therefore be of some interest to give a short account of a case that occurred recently in the Isle of Wight.

On Oct. 5, 1945, a warm sunny day, a man was picking up chestnuts in Parkhurst Forest, when at about 1.35 p.m. he was bitten by a snake, which was clearly identified as being a large adder. The incident occurred near a factory where there is a division of the St. John Ambulance Brigade, and within a few minutes—certainly not longer than ten minutes—he was receiving attention from members of the Saro (I.W.) No. 2 Ambulance Division. The bite was on the first finger of the right hand in the region of the first phalangeal joint. A 1-inch (2.5-cm.) bandage was applied to the base of the finger as a constriction and the wound sucked. The patient was placed in a recumbent position and encouraged to keep calm. By this time slight swelling had taken place. A hot solution of potassium permanganate was applied and bleeding induced by gentle squeezing. About ten minutes after treatment a heavy sweat appeared on the patient's brow, and a dose of sal volatile was given, after which his condition improved.

No doctor was available, so the patient was taken by car to St. Mary's Hospital, Newport, the constriction on the finger having been released and reapplied before the commencement of the journey. On reaching the hospital the patient appeared quite calm, only complaining of pain at the seat of the injury. When the hospital sister examined the finger on arrival, about 25 minutes after commencement of treatment, the swelling had travelled approximately 2 in. (5 cm.) upwards. The patient was put to bed with applications of hot potassium permanganate, and later had an injection of 10 c.cm. "sérum antivénimeux" (Institut Pasteur de Paris).

The following day a large blister appeared on the top of the finger and was incised. On Oct. 10 the patient's condition was satisfactory, and he was due for discharge the next day. On Oct. 11, however, he complained of intense irritation of most parts of the body, with swelling of the face and vomiting. He was discharged on Oct. 13. After discharge he complained of "lack of feeling and sensation" from the site of the wound to the top of the finger. On Nov. 27 this was said to be gradually improving.

I am indebted to Divisional Superintendent W. E. Peach, S.J.A.B., for details of this report.—I am, etc.,

Wootton Bridge, I.o.W. F. R. B. H. KENNEDY.

Obituary

Staffordshire in general and the Black Country in particular (writes A. B. D.) are poorer and emptier places by the passing of Dr. LOCKHART LOWE on Sept. 3. Doing his daily round and performing the common task until a week before his death, he then became tired for the first time in his life and gracefully faded out from the turmoil which had always surrounded him. Born on April 1, 1870, Lowe was a Birmingham man. He was educated at his father's private school in Handsworth and had his medical training at Mason's College. In 1894 he took the Conjoint diplomas and a house appointment at the Paddington Infirmary. He then returned to the Midlands to assist Dr. Jonathan Hobbs at Clent. Thence he came to Walsall as partner to Dr. Caddick. He retained the Darlaston branch of the practice, and lived and worked there until his death. It is given to few general practitioners to serve the public for over fifty years, but this Lowe did, very ably and very pleasantly. His charm of manner and unruffled temperament endeared him to all his patients, commanded respect from the public and the esteem of his brother-practitioners. Though entirely unassuming and of retiring disposition he was a man of many parts. In his youth he had been a well-known Midland lacrosse player. He played a very good game of tennis until he reached 70 years of age. He was a born musician and could play any orchestral instrument; as a pianist he was an infant prodigy, giving a recital in Birmingham Town Hall before reaching his 'teens. Among his friends he was a trusted adviser, and his wide experience was of great value in committee work, for which he had a flair. No B.M.A. meeting was complete without him, and he missed few. He was an original member of the Walsall Local Medical and Panel Committee. He was chairman of this committee and also of the Walsall and Lichfield Division several times. In July, 1929, he was elected to the Staffs County Panel Committee, of which he became honorary secretary in 1937. On many occasions he attended Panel Conferences in London as a county representative. In 1937 he also became a member of the Staffordshire Insurance Committee. In Darlaston he held many appointments, including those of police surgeon, social welfare medical officer, and factory appointments. He was intimately associated with the St. John Ambulance and Red Cross organizations. He was surgeon to the Walsall and District Corps, and an able lecturer and examiner to both movements. When war broke out he was immediately active in organizing Civil Defence services. In addition to local committee work he was M.O. and instructor to a first-aid post. As chairman of war charity committees he was largely responsible for collecting many thousands of pounds for the Red Cross and other charities. His wife, who had been a chronic sufferer, predeceased him by several years. Dr. Lowe leaves two married daughters. Walsall and Lichfield Division and the Staffordshire Branch of the B.M.A. bid farewell to a very dear elder brother.

Dr. ALICE JANET MCLAREN, who died on Dec. 20 at Crail, Fifeshire, at the age of 85, was the first woman gynaecologist in Glasgow, and as joint founder and first medical superintendent of the Redlands Hospital for Women played a big part in the training and guidance of many medical women. A native of Edinburgh, Dr. McLaren had her training at the London School of Medicine for Women, and graduated M.B., with first-class honours in medicine, in 1890, taking the B.S. a year later, and the M.D. in 1893, after serving as resident house-physician at Leith General Hospital. She then became assistant to the surgeon of the Glasgow Lock Hospital, and later as one of the first two women to be appointed to the Board of Management she did much to effect reorganization and improvement of that institution. Later she was appointed assistant surgeon at the Glasgow Royal Samaritan Hospital, being the first woman to be elected to the visiting staff of a hospital in Glasgow. It was in 1903 that she took a leading part in founding the Glasgow Women's Private Hospital, now the Redlands Hospital for Women, and there she worked at first as gynaecological surgeon. Dr. Alice McLaren was also consulting gynaecologist to the Royal Mental Hospital and carried on during four decades a large private practice. When she retired from active work in 1932 a presentation was made to her in Queen Margaret College, Glasgow.

We regret to announce that Dr. WILLIAM HOWARD UNWIN died at Timaru, New Zealand, on Christmas Day in his 75th year. He was a student of Charing Cross Hospital, qualified in 1898, and took the F.R.C.S. diploma in 1901. At the Final M.B.Lond. examination he won the University scholarship and gold medal in obstetric medicine, and proceeded M.D. in 1903 after serving as house-surgeon at Charing Cross. During the war of 1914–18 Dr. Unwin was officer in charge of the surgical division of No. 2 N.Z. General Hospital at Walton-on-Thames. He held office as honorary secretary of the South Canterbury Division of the B.M.A. in 1922–4 and was elected president of the New Zealand Branch in 1944, having represented the Branch at the Centenary Meeting in London in 1932 and at the Plymouth Meeting in 1938.

Dr. EDWIN SWAINSON MILLER, surgeon captain, R.N. (retired), died at Brentwood, Essex, on Dec. 30, 1945, aged 76. He was the son of William Charles Miller, of Liverpool, and was educated at Shrewsbury School and at Liverpool University, whence he qualified as M.B., Ch.B.Vict. in 1893. After serving as house-surgeon at the Royal Infirmary, Liverpool, he entered the Medical Service of the Royal Navy, and retired in 1920 with the rank of surgeon captain. He then practised in Brentwood for a quarter of a century, and only finally relinquished this when his health began to fail last year. Dr. Miller married in 1915 Miss Helen Beatrice Liardet, who survives him with two sons, the elder of whom, Dr. P. J. Miller, is a member of his father's profession. Throughout his twenty-five years in Brentwood he was a member of the staff of the District Hospital. He joined the B.M.A. in 1897.

News has been received of the sudden death on Dec. 30 at Bhopal, India, of Lady BHORE, wife of Sir Joseph Bhore, K.C.S.I., K.C.I.E. Margaret Wilkie Stott, elder daughter of Joseph Stott, of West Newport, Fife, was born at Dundee on June 20, 1884, and from the Morgan Academy went to St. Andrews Medical College, Dundee, graduating M.B., B.Ch. St. Andrews in 1907. After a year as an assistant in general practice at Preston she went out to India as M.O. to the Berhampore Baptist Missionary Hospital. Her husband, whom she married in 1911, has been a distinguished member of the Indian Civil Service and held important Government offices before his appointment to the Governor-General's Executive Council. Lady Bhore won a Kaisar-i-Hind Medal and was awarded the O.B.E. in 1944.

By the death of Dr. J. PRICE WILLIAMS on Jan. 1 Swinton and Pendlebury has lost an outstanding personality. He was educated at Denstone College and Manchester, and obtained the M.R.C.S. and L.R.C.P. in 1888, the M.B.Lond., with honours in forensic medicine, in 1889, the M.D.Lond. in 1892, and the B.Sc.Vict. in 1904. After working as assistant resident M.O. at Monsol Fever Hospital he became public vaccinator for Swinton and Pendlebury, and medical officer to the Post Office. He leaves a widow and two children: Dr. E. Williams, who practises at Barnsley, Yorks, and a daughter married to Col. R. Raymond, I.M.S., who lives in Australia. Dr. Price Williams gave up practice ten years ago to reside at Bramhall and Ambleside. He held various offices: chairman of Lancs Area 22 Local Medical Committee and later Area 22 representative on the Lancs Panel Committee. He was a member of the committee of the Salford Division of the British Medical Association, which he joined in 1900. During his 47 years as a general practitioner he endeared himself to his friends and patients and earned the regard and good will of his fellow-practitioners, who on his retirement presented him with a writing-desk to mark their appreciation and their esteem of him as a leader of the local medical profession. In his younger days he was a playing member of the Swinton Cricket Club, a good chess and billiards player, and fond of bridge, music, and the drama.

Dr. CHARLES HARRY EAST, who died in retirement on Dec. 22 at his home at Bagshot, Surrey, aged 84, studied for the medical profession at King's College, London. He took the L.S.A. in 1884, the M.R.C.S. in 1886, the M.B., B.S. of Durham University in 1887, and proceeded to the M.D. degree in 1890. At King's College Hospital he was house-surgeon to Lord Lister, and medical registrar and tutor, and was also assistant demonstrator of anatomy at King's College. Dr. East practised for a short period in Monmouthshire, and then settled at Great Malvern until his retirement in 1921.

The following well-known medical men have died abroad: Dr. F. JAYLE, an eminent Paris gynaecologist and former editor of *La Presse Médicale*; Dr. RAFAEL A. BULLRICH, a cardiologist of Buenos Aires, aged 67; and Dr. MARIANO ALURRALDE, professor of clinical neurology at the Buenos Aires faculty of medicine.

Universities and Colleges

UNIVERSITY OF EDINBURGH

Dr. Douglas Guthrie, lecturer on the History of Medicine, will deliver an introductory lecture in the Pollock Memorial Hall, Bristo Street, Edinburgh, on Tuesday, Jan. 22, at 5 p.m., on "The Search for a Philosophy of Medicine."

Sir Alexander Fleming, F.R.S., will deliver the Cameron Prize Lecture on "Penicillin—its Origin and Use" in the anatomy lecture theatre, University New Buildings, Teviot Place, Edinburgh, on Friday, Feb. 22, at 5 p.m. All students and graduates are invited to attend.

QUEEN'S UNIVERSITY, BELFAST

The following candidates have been approved at the examinations indicated:

M.B., B.Ch., B.A.O.—*R. D. N. Blair, *B. T. Crymble, *T. H. Flewett, *C. S. Lindsay, *C. B. McClintock, *J. O. R. Stewart, J. Beckett, L. C. Bell, H. J. Blackwood, J. F. Booth, E. R. Broadberry, C. Burns, H. MacD. Cameron, Enda Casement, S. P. C. Casey, J. B. Cromie, Joan P. D'Arcy, A. W. Dickie, P. F. Donnelly, Figile F. Dove, P. Farnan, W. I. Forsythe, Rosemary Fullerton, W. R. Gilmore, A. L. Grffiths, D. J. W. Hawe, G. V. Hinds, J. A. Howard, T. V. Humphreys, R. Jacobs, F. R. Johnson, S. Kay, S. H. S. Love, J. Lowry, Mary C. McClure, Florence McKinstry, T. A. I. McQuay, D. Maguire, J. N. Montgomery, W. E. Parkes, J. E. Pyper, J. I. Rolston, S. Sloan, Maude Stevenson, G. K. Thomas, N. D. Wright.

* With second-class honours.

The Services

The honour of commandership of the Legion of Merit has been conferred upon Air Marshal Sir Harold Whittingham, K.C.B., K.B.E., LL.D., K.H.P., F.R.C.P., Director-General of Medical Services, R.A.F., by the President of the United States of America.

Capt. S. P. Dutt, I.A.M.C., has been awarded the M.C., in recognition of gallant and distinguished services in the Middle East in 1942.

Surg. Cmdr. W. McO. Macgregor, O.B.E., V.D., and Temp. Surg. Lieuts. T. E. Barwell and A. F. Ross, R.N.V.R., have been mentioned in dispatches.

Acting Surg. Lieut.-Cmdr. L. E. Prowse, R.C.N.V.R., has been awarded a commendation.

The following have been mentioned in dispatches in recognition of gallant and distinguished services in Italy: Lieut.-Col. (Acting Col.) C. A. McIntosh; Lieut.-Cols. W. H. P. Hill and J. S. McCannel, O.B.E.; Majors L. W. Bassett, T. G. Fyshe, and J. F. Nicholson; Capts. M. L. Harley, M. Lerner, M.C., R. M. Levine, H. G. Metcalfe, R. F. M. Meyers, W. A. Reed, and W. H. White; Lieut. E. Shaw, R.C.A.M.C.

The following have been mentioned in dispatches in recognition of gallant and distinguished services in Burma: Cols. (Temp.) N. P. Breden, and W. J. Officer, O.B.E.; Col. (Acting) M. MacR. Paterson, O.B.E. (killed in action); Lieut.-Cols. (Temp.) D. G. Adamson, J. McK. Johnstone, W. G. MacDougall A. J. Martin, O.B.E., D. J. O'Ryan, R. P. Smyth, O.B.E., J. A. Strong, M.B.E., and W. G. Sutcliffe; Lieut.-Col. (Acting) W. L. Petter; Majors (Temp.) T. Fitt, W. R. N. Friel, T. Griffiths, A. J. Moffett, H. G. Page, R. A. Philp, A. E. G. Ridgway, J. G. Scott, M.B.E., R. K. A. Van Someren, and R. Wigglesworth; Capts. D. M. P. R. Clarke, H. D. Cockburn, M.C., L. R. Dalton, W. Drummond, J. A. Farrell, P. E. Helme, M. H. Hughes, J. F. Mark, C. M. McGeoch, J. W. F. Richardson, M. F. Ronayne, I. H. Stewart, and A. H. Williams; Capt. (Temp.) J. A. McPherson; Capt. (Acting) P. R. Robinson, R.A.M.C. Cols. (Acting) J. D. Grant, G. B. Jackson, and V. E. M. Lee; Lieut.-Cols. (Temp.) L. H. Cooper, and M. B. Menon; Major (Temp.) A. C. Greene; Capts. B. Singh, C. T. Shah, E. B. Naug, M.C., B. J. Pereira, J. M. Pinto, H. A. Press, B. Rowlatt, and S. N. Sinha, I.M.S.; Lieut.-Col. (Temp.) J. Reidy; Lieut.-Col. G. V. Chaphekar; Major (Temp.) A. E. R. Coombes; Capts. M. P. U. V. Raja, M. L. Panjani, M.B.E., and V. Rangaswami; Lieuts. C. R. Narayan, P. Jagannatham, M. A. Jabbar, and S. S. Roy; Subadars K. Ram and Nandlal; Jamadars M. N. Khan and P. Singh, I.A.M.C.; Major (Temp.) J. A. Hildes, R.C.A.M.C.

CASUALTIES IN THE MEDICAL SERVICES

Officially reported killed in action at Singapore, Feb. 15, 1942.—Capt. William Lee Donaldson, Medical Officer, S.S.V.F.

DEATHS IN THE SERVICES

Lieut.-Col. HERBERT EDWARD DRAKE-BROCKMAN died on Dec. 29 in Jersey, after a short illness, at the ripe age of 80. He was one of three distinguished Indian Medical Service officers of that name, and was born at Cawnpore on Feb. 14, 1865. He was educated at St. George's Hospital, passed the English Conjoint final examinations in 1887 and the F.R.C.S.Ed. in 1889. He entered the I.M.S. in 1888, and distinguished himself at Netley by carrying off the Herbert exhibition and medals in tropical medicine and in hygiene. After completing his service on the military side he entered the political department, and held at different times the important posts of Residency Surgeon at Hyderabad, East Rajputana, Kashmir, and West Rajputana. When at Hyderabad he held the responsible positions of Director of the Medical Department and Sanitary Commissioner for H.H. the Nizam's Dominions, and principal of and lecturer on ophthalmic surgery in the Hyderabad Medical School. In all these positions he inspired the trust and confidence of the rulers of the States he served so faithfully. While in India he published a medico-topographical gazetteer of the Eastern Rajputana States, a work on the anthropometry of castes and tribes of the North-West Province and Oudh (now the United Provinces), and a report on a plague epidemic in the Hyderabad State, 1913. He also saw active service on the North-West Frontier with the Miranzai Expedition of 1891. After his retirement in 1920 Drake-Brockman became medical officer in charge of a tropical diseases clinic and oculist under the Ministry of Pensions at Southampton. He was a member of the Ophthalmological Society of Great Britain, that being his favourite subject. He joined the British Medical Association in 1889.

In an effort to increase the production of penicillin, for which the world-wide demand far exceeds the present manufacturing capacity, the U.S. Civilian Production Administration on Dec. 26 announced that it will give special priorities assistance to producers and to builders of new penicillin plants.

No. 52

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec. 29.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1945 (a)	(b)	(c)	(d)*	(e)	1944 (Corresponding Week) (a)	(b)	(c)	(d)*	(e)
Cerebrospinal fever	38	1	25	2	3	38	6	24	1	1
Deaths		—	—				1	—		
Diphtheria	514	30	165	130	19	446	16	136	191	15
Deaths	9	—	6	1	1	11	1	—	1	1
Dysentery	265	22	66	14	—	123	16	101	1	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	2	—	—	—	—	—	—	—	—	—
Deaths		—					—			
Erysipelas			54	8	1			65	23	2
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				59					26	
Deaths	55	8	8	22	—	44	1	12	8	3
Measles†	565	69	58	303	2	8,870	155	471	25	188
Deaths	—	—	2	—	—	14	—	1	—	—
Ophthalmia neonatorum	50	9	17	—	—	52	2	15	—	—
Deaths										
Paratyphoid fever	5	—	2 (A1, B1)	1 (B)	—	6	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal‡	1,118	91	14	14	3	812	29	19	5	16
Deaths (from influenza)	72	9	5	—	2	35	1	2	—	—
Pneumonia, primary			276	55				359	46	
Deaths		64		8	10		41		13	9
Polio-encephalitis, acute	1	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	25	2	—	—	—	6	—	1	2	—
Deaths		—					—			
Puerperal fever		2	20				3	8		—
Deaths										
Puerperal pyrexia§	94	4	7	3	—	99	8	14	—	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,376	126	252	43	30	1,512	37	218	38	49
Deaths	1	—	—	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	9	3	1	8	—	4	—	1	10	—
Deaths	2	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	1	—
Deaths				—	—				—	—
Whooping-cough†	724	44	24	104	5	1,179	43	53	61	11
Deaths	10	2	1	1	—	7	1	3	—	—
Deaths (0–1 year)	407	51	51	37	17	389	35	81	32	30
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,704	850	686	165	142	5,363	745	685	190	140
Annual death rate (per 1,000 persons living)			15·6	10·6	¶			15·7	12·3	¶
Live births	4,963	570	787	209	226	5,251	437	865	308	229
Annual rate per 1,000 persons living			15·7	13·5	¶			17·6	20·0	¶
Stillbirths	205	21	36			181	15	28		
Rate per 1,000 total births (including stillborn)			44					31		

* Returns for infectious diseases for Eire include those for the previous week.

† Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ Includes puerperal fever for England and Wales and Eire.

¶ Owing to movements of population, birth and death rates for Northern Ireland are still not available.

EPIDEMIOLOGICAL NOTES

Influenza and Winter Temperatures

Is it true, as has recently been suggested in the daily press, that an influenza epidemic may be avoided if we have a hard winter? This belief appears to be widespread, and it seemed worth while reviewing past experience to see whether there is in fact any justifiable foundation for such an opinion.

The usual trend of influenza mortality—a very slow rise in the late autumn with a more rapid increase in late December and early January—does suggest a seasonal factor. Although influenza has appeared in epidemic form throughout history, it is only in recent years that the disease has become an important annual cause of death in this country. During the decade 1880–9 the annual death rate was as low as 2 to 5 per million. After the epidemic of 1891–2 the incidence of influenza remained high, but between 1901 and 1917 the death rate never exceeded 293 per million; in nine of the seventeen years it was below 200. There was a further increase in the endemic level after the pandemic of 1918–19; in only six of the nineteen years from 1920 to 1938 was the death rate below 200 per million, and in four years it was more than 500. Any deduction concerning the relationship of hard winters to influenza epidemics must be based on the later period, in which the outbreaks are in sharper contrast than in the earlier periods. Since most deaths from influenza are registered in the first quarter of the year, this period determines the annual rate. The following table gives the deviation of temperature from the normal daily mean for October to February (normal values being based on the 35 years, 1891–1915) for the years when the crude death rate per million exceeded 400, and for the years when the death rate was less than 200.

Years of High Mortality

	1937	1933	1929	1927	1924	1922
Death rate per million	454	569	734	567	489	563

Mean Deviation of Temperature from Normal Daily Mean

	1936–7	1932–3	1928–9	1926–7	1923–4	1921–2
October	−0·8	−0·8	+1·6	−2·2	+0·5	+6·4
November	−0·1	+0·9	+2·8	−0·2	−4·9	−2·3
December	+1·6	+2·5	−1·0	−0·2	−1·1	+3·5
January	+1·6	−1·5	−3·1	+1·9	+1·8	+0·2
February	+2·3	+0·5	−6·2	+0·5	−1·4	+1·0

Years of Low Mortality

	1938	1936	1935	1934	1930	1928
Death rate per million	118	148	182	139	126	196

Mean Deviation of Temperature from Normal Daily Mean

	1937–8	1935–6	1934–5	1933–4	1929–30	1927–8
October	+1·0	−0·4	+1·1	+1·7	+0·6	+1·7
November	−1·0	+1·5	+0·6	−0·7	+0·9	−0·3
December	−2·8	−2·5	+5·9	−4·5	+2·8	−3·9
January	+2·6	−0·8	+0·6	+0·1	+3·9	+2·9
February	+1·3	−2·7	+2·9	−0·3	−2·1	+3·4

These figures afford no evidence that a hard winter prevents influenza epidemics. If a deviation of +1.5 or more is taken as a warm month, and −1.5 or less as a cold month, we find that each of the five months appear with equal frequency as warm months of high and of low mortality. January was warm in three of the low-mortality years and in three years when the influenza mortality was high. All the four cold Decembers were followed by a low mortality, but when November and January were cold on two occasions the mortality was high. The outbreaks of 1929 and 1930 provide an interesting contrast: the former was the largest death rate recorded since 1918–19 and the latter was the lowest but one. January and February of 1929 were noted for exceptional cold—it was the severest winter since the great frost of 1895. In January, 1930, the temperatures recorded at Greenwich were the highest since 1841. Despite the unusual severity of the winter in 1929 the deaths from influenza in the great towns continued to rise throughout the early part of the year, from 99 in the week ending Jan. 5 to a maximum of 2,183 deaths in the week ending March 2. The epidemic declined slowly, and it was not until the week ending May 11 that fewer than 100 deaths were

recorded weekly. Again, the mortality of 1935 is in direct opposition to the hypothesis that a negative correlation exists between the size of the influenza outbreak and the severity of the winter. During the winter of 1934–5 the mean daily temperature was above the average and December was phenomenally mild, one of the warmest on record. Despite the mild winter the death rate during 1935 was only 182 per million.

Discussion of Table

In *England and Wales* a general fall was recorded in the incidence of infectious diseases. The largest decreases were 342 for scarlet fever, 376 for whooping-cough, and 55 for diphtheria. The only rise was 35 for dysentery.

Scarlet fever and whooping-cough were less prevalent in all areas, but the only large falls were those of whooping-cough in Yorks West Riding 49, and in Lancashire 36. The only notable variations in the local trends of measles were a fall in Lancashire of 76, and in Norfolk of 29. The largest of the local changes in diphtheria were a rise in Durham of 20, a fall in London of 20, and a fall in Staffordshire of 10.

There was a large outbreak of dysentery in Leicestershire, where the cases rose from 3 to 102, the centres of infection being Melton Mowbray U.D. with 81 cases, and Melton and Belvoir R.D. with 20. The other large returns were Lancashire 54, London 22, Yorks West Riding 12, Surrey 10.

In *Scotland* a sharp rise (84) was recorded for acute primary pneumonia. Other diseases with a higher incidence were dysentery (23 more cases) and diphtheria (10 more). The largest returns for dysentery were Glasgow 22, and Falkirk 16.

Quarterly Returns for England and Wales

During the September quarter the birth rate was 15.6 per 1,000, compared with 17.2 in the third quarter of 1944, and 15.1 for the average of the September quarters of 1939–43. Infant mortality was 38 per 1,000 live births, the lowest rate recorded in any quarter, and 5 below the average of the 10 preceding third quarters. The stillbirth rate was 2.7 of the total births registered. The general death rate was 9.0 per 1,000, the lowest rate recorded in any quarter; the rate in the third quarter of 1944 was 10.1, and the average of the five preceding quarters was 9.7. The number of persons married was 237,446, this total exceeding that for the third quarter of 1944 by 72,842, and being 10,430 higher than the average for the five preceding third quarters.

Infectious Diseases during 1945

The incidence of infectious diseases in England and Wales, judged by the weekly returns, was below the average of the preceding war years, with the exception of measles and dysentery.

Annual Notifications in England and Wales

	1945	1944	1943	1942	1941	1940
Scarlet fever	74,392	93,801	116,217	84,932	59,111	65,573
Whooping-cough ..	62,022	93,107	95,859	65,563	171,406	53,403
Diphtheria	25,059	29,446	35,944	42,318	51,091	46,683
Measles	443,002	117,437	374,198	285,300	406,507	407,908
Acute pneumonia ..	34,059	38,175	52,225	42,487	50,514	47,712
Cerebrospinal fever ..	2,691	2,883	3,380	6,089	11,117	12,791
Dysentery	16,533	10,150	7,772	7,177	6,597	2,843
Typhoid and paratyphoid fevers	679	536	707	887	4,703	2,824
Influenza deaths (great towns)	1,307	1,744	6,280	1,544	2,993	5,510

The steady increase in the incidence of dysentery is outstanding; notifications during 1945 were six times as numerous as in 1940. Although the total notifications of diphtheria during 1945 show a further improvement, the trend during recent months has been disappointing. During the first quarter of 1945 diphtheria notifications were 6,061, compared with 9,005 in 1944, but during the last six months 13,027 cases were reported, which was only a slight improvement on the total of 13,468 for the last half of 1944. A continuous decrease in cerebrospinal fever has been noted every year since the large outbreak at the beginning of the war. The incidence has, apparently, settled to an endemic level of twice the pre-war figure.

Week Ending January 5

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,250, whooping-cough 1,048, diphtheria 469, measles 771, acute pneumonia 1,165, cerebrospinal fever 53, acute poliomyelitis 13, dysentery 285, paratyphoid 2, typhoid 3. In the great towns 123 deaths were attributed to influenza.

Medical News

A meeting of the Ross Institute Industrial Advisory Committee will be held in the Council Chamber of the Rubber Growers' Association, 19, Fenchurch Street, E.C.3, to-day (Friday, Jan. 18) at 2.30 p.m. Dr. G. Macdonald, director of the Ross Institute, will speak on the development of oversea branches, and Dr. R. Ford Tredre, assistant director, on the control of malaria in West Africa.

An Inaugural Lecture will be given at University College, Gower Street, London, W.C., by the Galton Professor of Eugenics, Dr. L. S. Penrose, on Monday next, Jan. 21, at 5.30 p.m. in the Eugenics Lecture Theatre. Subject: "The Eugenical Problem of Phenylketonuria."

A meeting of the Medico-Legal Society will be held at 26, Portland Place, W., on Thursday, Jan. 24, at 8.15 p.m., to hear a joint paper by Mr. V. Zachary Cope, F.R.C.S., and His Honour Judge W. G. Earengey, K.C., on "The Medico-Legal Aspects of Damages for Shock." Members may introduce guests to the meeting.

The Association of Clinical Pathologists has arranged a scientific meeting to be held at the London Hospital, Whitechapel, E., on Friday and Saturday, Jan. 25 and 26. On Friday morning, with Prof. H. M. Turnbull in the chair, there will be five communications, and at 5 p.m. two papers will be read, with the president, Dr. Eric Wordley, in the chair. At the morning session on Saturday, with Prof. S. P. Bedson in the chair, there will be five communications. The afternoon session will be devoted to an informal discussion on the sedimentation rate, with special reference to the comparative merits of various techniques.

A sessional meeting of the Royal Sanitary Institute will be held at Weymouth Guildhall on Saturday, Jan. 26, at 10 a.m., when papers will be read by Dr. T. V. Cooper on "Food-poisoning," and by Mr. A. D. Campbell on "Bovine Diseases Communicable to Man, with Particular Reference to the Hygiene of Milk."

On Jan. 3 Lord Pethick-Lawrence, Secretary of State for India, opened at the Science Museum, South Kensington, a private view of the first Asoka-Akbar motor health van to be made and equipped in this country under the Skippo Fund for the benefit of isolated village people in India. It will serve as an ambulance, a small dispensary, and a canteen. Lady Reid, chairman of the fund, said that the All-India Women's conference had undertaken responsibility for maintaining the van and providing its crew.

As already announced, the name of the Charity Organization Society is to be changed to the Family Welfare Association, but there will be no curtailment of the present activities of the society, which was founded in 1869. The change will take place on Feb. 1. The headquarters are still at Dennison House, Vauxhall Bridge Road, S.W.1, from which address the *Annual Charities Register and Digest* is published.

At a meeting of the directors of the Society for Relief of Widows and Orphans of Medical Men held on Jan. 2, with Dr. R. A. Young, president, in the chair, the death was reported of Mr. James Sherren, a vice-president of the society. A Christmas present of £15 was made to the 55 widows in receipt of grants. £1,940 was voted for the payment of the half-yearly grants. Relief is granted only to widows and orphans of deceased members, and membership is open to any registered medical practitioner who at the time of his election resides within a twenty-mile radius of Charing Cross. Election is by ballot. Full particulars may be obtained from the Secretary, 11, Chandos Street, Cavendish Square, W.1, who would be glad to have the present addresses of members who have returned from service in H.M. Forces.

The second annual report of the Dublin Rheumatism Clinic Association covers the year 1944 and is issued from 34, Upper Mount Street. The number of applications for treatment has continued to grow, and an increasing number of country patients are being sent for consultation and for treatment at the clinic. Four clinical assistants now work for a year under the medical director, Dr. J. T. O'Reilly, and thus gain special knowledge of the rheumatic diseases and experience in physiotherapeutic methods. Detailed records of 3,500 cases of rheumatism have been gathered, and progress is being made towards an accurate survey of the problem in Eire.

An endocrine clinic for children has been started at the Princess Louise Kensington Hospital for Children, St. Quintin Avenue, W.10, on Thursday afternoons by appointment.

Prof. F. E. Tylecote, M.D., F.R.C.P., has been appointed chairman of the Public Health Committee of the Association of Municipal Corporations, in succession to Sir George Martin, K.B.E.

Dr. F. J. Russell Stoneham, D.A., has been appointed senior anaesthetist to the Birmingham Accident Hospital and Rehabilitation Centre.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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ANY QUESTIONS?

Dermatitis Herpetiformis

Q.—*What is the cause of dermatitis herpetiformis (Duhring's disease) or pemphigus pruriginosus? A man aged 50 has been confined to bed with this condition for the past nine months. Sedative lotions and ointments have been tried with varying success, as have arsenic and iron internally, calcium and adrenaline injections, sulpha drugs, etc. What is the correct treatment?*

A.—The aetiology of dermatitis herpetiformis is obscure; focal infection, the absorption of toxic agents from the intestines, a specific virus infection, and—on the slender evidence of the frequently present eosinophilia—an allergic basis have all been suggested at different times. Arsenic given in increasing doses to the limit of tolerance, and then scaled down, in a series of intensive courses, each spread over ten days, is often beneficial and permits of the high dosage essential to obtain a result. Arsenic can also be administered intravenously as neoarsphenamine. Hexamine has proved useful in some cases, and the administration of small doses of sulphapyridine is constantly effective, proving almost a specific therapeutic test. The failure of the sulpha drugs, which may include sulphapyridine, as reported in the question, throws doubt upon the diagnosis, and suggests pemphigus as an alternative. Bayer's "germanin," had it been available, might well be the remedy of choice, although requiring some experience if unfavourable reactions are to be avoided.

Modern Colostomy

Q.—*How does a modern colostomy differ from the old-fashioned classical operation?*

A.—The chief purpose of a colostomy is to divert the contents of the colon completely from the portion of the bowel below the artificial opening. The colostomy should be made in the most suitable part of the colon, and care should be taken that the opening does not retract within the abdominal wall. In former times sufficient care was not always taken to see that the faecal stream was completely diverted; the rod commonly utilized to form the spur was frequently removed too soon and some of the faeces used to enter the lower part of the bowel. Nowadays great care is taken to ensure the formation of a good spur, either by keeping the rod or rubber tube (which transfixes the mesentery) in its position for two or more weeks, or by completely dividing the bowel. The spur may also be made more prominent by causing oedema of the intervening mesentery by tying a ligature loosely round it.

Left inguinal colostomy used to be done sometimes without sufficient consideration of the position of the growth. It is now quite common to perform transverse colostomy, so that the opening may be well away from a growth in the left side of the colon. The opening through the abdominal wall is made smaller than formerly, so as to lessen the risk of ventral hernia; the risk of stricture at skin level is obviated by excising a small portion of skin at the edges of the wound. Occasionally obstruction of the small intestine has followed the slipping of a loop of gut between the abdominal wall and the coil of colon which has been brought up for the formation of a colostomy; nowadays this is prevented by stitching the parietal peritoneum to the mesentery of the colonic loop, and thus shutting the door of this dangerous opening. When the whole of the bowel below a colostomy has been removed, the main considerations are to see that the part brought out to form the permanent anus has a sufficient blood supply, and is sufficiently long to maintain its position without tension and consequent danger of retraction within the abdomen; such a terminal colostomy is often made through a small stab incision, which sufficiently ensures the patient against the danger of subsequent ventral hernia.

In a discussion on the management of the permanent colostomy (*Journal*, Aug. 18, 1945, p. 229) the term "modern colostomy" was used strictly with reference to the modern treatment for cancer of the rectum. Mr. A. Lawrence Abel was making the point that almost all cases of cancer of the rectum, no matter how advanced, including many cases of four years' history and more than four years' duration, are by modern technique found to be operable. The operation he advised was the abdomino-perineal excision of the rectum, which entails removing the whole of the last 18 inches (45 cm.) or so of the large intestine—i.e., from about the middle of the pelvic colon down to and including the anus and perianal tissue. This leaves the cut end of the pelvic colon free to be brought through the abdominal wall, and therefore becomes a terminal colostomy in practically all cases. The term "modern colostomy" was used to emphasize Mr. Abel's view that cancer of the rectum should be excised in all possible cases, even with secondaries in the liver or some actual growth known to be left in inaccessible parts of the pelvis; in this terminal colostomy the wall of the bowel was sutured to the peritoneum and the skin. Very few cases developed any herniation or bulging of the abdominal wall, and there was very little projection from the skin. If every endeavour was made (and Mr. Abel claimed success in over 90% of cases) to remove the actual growth by a one-stage operation, using the pre-operative technique he outlined, a much more satisfactory colostomy was obtained than the old-fashioned classical operation, and it was more easy to control.

Coroners and Mental Hospitals

Q.—*Necropsies are carried out as a routine in most mental hospitals. Is it obligatory to supply the coroner with a copy of the post-mortem notes on certified or temporary patients when there is no doubt as to the cause of death? In such a case, can the coroner dictate the extent and scope of the post-mortem examination? Has the coroner a statutory or other right to demand that with every notice of death in the case of a certified or temporary mental patient there should be attached a form, signed by the nearest relative, stating that they are satisfied with the treatment received by the patient and do not desire an inquest? This seems a most undesirable practice, apt to initiate a suspicion that ill treatment is common in mental hospitals.*

A.—The coroner's powers and duties are laid down in the Coroners Acts, 1887–1926. When he is informed that the dead body of a person is lying within his jurisdiction, and has reasonable cause to suspect that the person has died a violent or unnatural death or a sudden death of which the cause is unknown, or has died in prison (or in certain other circumstances), he must inquire into the death.

When a certified or temporary patient dies in a mental hospital (etc.) the superintendent must notify the coroner in writing, and give a statement of the facts, before the end of the next day. Now the coroner has no legal power to call for a copy of the post-mortem notes, nor for a form signed by the next-of-kin expressing satisfaction with the treatment. On the other hand, he has the legal power to declare in any case that he is not satisfied with the statement of the facts, and to treat the death as one that puts him on inquiry. Then he may do any or all of the things the Acts say he may—i.e., summon the medical attendant of the deceased to give evidence on the cause of death, and direct him or some other practitioner to make a post-mortem examination and report in writing, and order any special analysis or test to be made. Briefly, the questioner has the choice between doing what the coroner asks, and declining and submitting to having all his deaths inquired into by the coroner's statutory procedure.

Effect of Tobacco on the Heart

Q.—*I should like information about (1) symptoms of tobacco poisoning of the heart; (2) differential diagnosis; (3) any recent literature on the subject.*

A.—There is still much controversy as to whether tobacco damages the heart at all. The evidence is mainly statistical, indicating a higher proportion of electrocardiographic abnormalities and a lower expectation of life in smokers than in non-smokers. It is probable that in the cardiovascular, as in other systems, tobacco acts by aggravating pre-existent disorders rather than by producing a specific syndrome of intoxication. The only common symptoms are transient acceleration of the pulse and elevation of blood pressure during smoking, a tendency to extrasystoles, and rather more than the normal increase in pulse rate and breathlessness on exertion. In those already suffering from coronary sclerosis smoking may precipitate attacks of angina pectoris. The differential diagnosis is from other conditions which may increase cardiovascular irritability, such as emotional stress, caffeine, etc. There does not appear to be any recent scientific review of the effects of tobacco-smoking on the circulation, but original data and references are given in an article by H. G. Hadley (*Med. Rec.*, 1941, **153**, 267).

Boveri Test for Tuberculous Meningitis

Q.—*What is known of the Boveri test for tuberculous meningitis? Is this test—bleaching of a solution of potassium permanganate by the cerebrospinal fluid—given only in tuberculous meningitis? On what factor does the bleaching action depend?*

A.—Reference to several comprehensive works on clinical pathology yields no information about this test. Admixture of equal volumes of a dilution of human plasma in distilled water, contain-

ing 100 mg. protein per 100 c.cm., and of a 1 in 5,000 solution of potassium permanganate completely bleaches the latter, as would be expected. Potassium permanganate liberates oxygen in the presence of any organic material, and is thus decomposed. This is, therefore, no more than a rough test for excess of protein, and would give a positive result in any acute meningitis. If it has been found of the slightest use in the past, it can only have been when facilities for the proper examination of the fluid were not available.

Penicillin for Styes

Q.—*How is penicillin used in the treatment of styes?*

A.—Penicillin locally gives excellent results in styes. It is best used after epilating the infected lash or lashes and expressing such pus as is present. Penicillin ointment can then be smeared, in the first place, on the healthy lid margin to counteract any reinfection. The infected area is then covered with a thicker layer of ointment. This procedure can be repeated four or five times a day, and maintained for two or three days. It is essential that the ointment be made up in a suitable base, as an unsatisfactory base decomposes the drug. It is best to use specially prepared ointment bases, such as those put up by British Drug Houses and by Boots. These are adequately buffered and sterilized. The most suitable concentration of penicillin is 250 to 400 units per gramme. These ointments are more stable than solutions, and remain active for at least a fortnight at room temperature. There is no point in the systemic use of penicillin in styes, for adequate concentrations are obtained by the local application. Though styes can be rapidly brought under control by local penicillin, and reinfection and relapse frequently prevented, it is still essential to recognize that most patients suffering from styes require general treatment to counteract their poor resistance to infection. At school treatment centres it has been found that penicillin by itself does not solve the problem of recurrent styes in children. It is still necessary to provide general constitutional treatment for such children.

Time of Death after Injury

Q.—*A necropsy at 8.30 a.m., on the body of a man alleged to have been shot the previous afternoon, revealed an entrance wound in the right abdomen and an exit wound in the left buttock. There were eight punctures of the intestine, the left hip was fractured, and the left external iliac vessels were ruptured. In the peritoneal cavity there were 1½ pints (850 c.cm.) of fluid blood with no clots. The climate in this North-West Frontier Province is subtropical, and the maximum temperature at the time was 112° F. with no rain. One medical witness said that death must have taken place not later than half an hour after the shooting. Another medical witness stated that blood clots four to six hours after death in subtropical climates, and after twelve hours liquefies again. In his view the man could have lived for more than two hours, and could have made a statement, after the injury. Please comment on these two different views.*

A.—Any opinion as to the duration of survival, or the possibility of volitional acts, after penetrating injuries of the abdomen must be very guarded. No definite opinion is warranted from the quantity of blood found or its condition with reference to clotting. Since the bowel was perforated in this case, the admixture of intestinal contents from the ruptured bowel would prevent the normal clotting of blood. Opinion in such cases is best assessed on microscopical examination for signs of repair in the wounds themselves. The infiltration by leucocytes of the periphery of the wound starts in about one hour, and by the extent of the leucocytic migration and subsequent stages of repair, which follow in regular sequence, a more definite opinion can be formed. In this particular case one can see no reason why the person should not have lived and have given a coherent statement two hours after the injury.

Painful Feet

Q.—*A patient has been suffering for several months from swelling and marked tenderness of the pressure points of the soles and undersurfaces of the toes of both feet. There are thickening of these areas and a dusky flush. Padding the arches with adhesive felt to relieve the strain on the other parts of the soles relieves the pain for a day or two, but very soon these areas also become painful. In the past 18 years I have seen about six similar cases. They seem ultimately to clear up, but take a matter of months or years to do so. Is there any effective ambulatory treatment?*

A.—The causes of pain in the pressure areas of the soles of the feet are so numerous that it is not always possible to give a dogmatic opinion even when a case is seen personally. Still less is a correspondence answer likely to hit the mark. However, in the absence of any recognizable local lesion, the following suggestions may help. The earliest stages of ischaemic conditions, whether arteriosclerotic, thrombo-angiitic, or spastic, often cause pain, redness, and some swelling, before other effects become obvious. Elderly patients in whom the subcutaneous fat is undergoing atrophy and absorption all over the body, including the soles of the feet, not infrequently complain of tenderness over pressure areas, and upon examination the bones can be easily palpated through the thinned coverings. Diabetics, short of obvious clinical signs of neuritis or arteriosclerosis, may complain of such symptoms, sometimes associated with a little swelling and dusky redness. A further condition, which is becoming so rare that it may easily be overlooked, is gout. The deposit of biurate crystals in the fibro-fatty pads of the heel and balls of the toes may be so great as to cause recognizable nodules, but in lesser cases the manifestations are not unlike those described in the question. A patient who has been off his feet for a long time on account of illness, or who has suffered from a wasting disease, may complain when he first starts to get about again. Like the elderly patients, there is here loss of resilience in the pads of the sole. Finally, in these days when so much is attributed to vitamin shortage it is just necessary to add that quite rarely shortage of the B factors may be the cause of pain and swelling in the soles of the feet. In this answer, which is by no means exhaustive, it is of course assumed that there is no evidence of gross general or nervous disease.

So far as treatment goes, if one of the above causes is discovered it must be dealt with. Local treatment by skilful padding is correct, but sponge rubber might prove a more suitable material than felt in a case of this type, where relief from pain rather than correction of a deformity is the aim.

Penicillin for Gonorrhoea

Q.—*Is instillation of penicillin solutions into the urethra of value in the treatment of acute gonorrhoea? If this worked it might be less painful than repeated intramuscular injections.*

A.—Instillations of penicillin solutions into the urethra have been tried in gonorrhoea; they are of some value—as are solutions of sulphonamides—but are far less effective than penicillin parenterally, and cannot be relied on to effect cure of the condition. Now that gonorrhoea can usually be cured by a *single* injection of penicillin suspended in beeswax-peanut oil the question of pain assumes much less importance.

Alveolar Absorption

Q.—*I recently had toothache, and x rays showed two molars, which had been filled, with "bony absorption at the alveolar margin." The teeth and roots appeared sound radiologically, and externally the teeth seemed sound; there was no sign of inflammation of the gums. It has been suggested that this is "anno domini" (I am 48), that there is no treatment, and that when the pain becomes unbearable I must have the teeth extracted. What is the cause of the alveolar absorption, and is there no treatment?*

A.—As the teeth in question appeared sound on both clinical and *x*-ray examination, it can be assumed that the toothache was not caused by any carious cavity. As they had been filled previously, it is possible that the pain was due to a hyperaemic condition of the pulp, or even an acute pulpitis. The bony absorption at the alveolar margin, however, means that there is some degree of pyorrhoea present, with the subsequent exposure of the cementum or dentine of the root. Extremes of temperature, or the contact of some jam or syrup with this area, would cause pain. The treatment of pyorrhoea cannot be entered into here, except to point out that it depends on the surgical elimination of all pockets and the keratinization of the gum margin by constant friction with the toothbrush and wooden toothpick. The exposed dentine can be treated with silver nitrate, or, if the pain is acute, by the application of zinc oxide and clove oil.

Pregnancy in Middle Age

Q.—*I have recently been asked the same question by three patients—ladies of 51: "Although menses are still fairly regular, can I safely give up contraceptive methods, or is there still a risk of pregnancy?" All these ladies are married with children, and in no case has there been a pregnancy for 19 years.*

A.—Fertility in woman is at its peak between the ages of 20 and 24, declines rather slowly until the age of 35, and thereafter falls rapidly until it *approaches* zero at the age of 45 to 50. It is, however, impossible to say at what age sterility is absolute. So long as menstruation continues there is a slight chance of pregnancy, and conception can occur even after the menopause. This is because ovulation sometimes continues, regularly or irregularly, in the absence of menstruation. The long period of sterility (presumably voluntary) in each of these cases does not preclude conception, although it may mean that it is a little less likely. It is perhaps relevant to comment that the husbands should not be excluded from consideration—a high degree of fertility in the male might to some extent counteract lowered fertility in the female. Probably the best plan is to explain to each patient that, although the chances of conception are remote, they nevertheless exist and will continue to do so for at least one or two years after the menopause. Thereafter, although pregnancy is still not impossible, it is so unlikely as to be unworthy of practical consideration. It is then up to each patient to decide whether she is willing to take what amounts to the slight risk involved in abandoning contraception at the present time.

Some published cases of post-menopausal pregnancy, and the question of contraception and the menopause, were referred to in answers published in the *Journal* (Dec. 11, 1943, p. 771, and

June 30, 1945, p. 933). These might be consulted. According to the Registrar-General's Statistical Review for England and Wales for 1940, 24,793 "maternities" were credited to women aged 40–44, 2,203 to women aged 45–49, and 18 to women of 50 and over. We do not know, however, whether these women had ceased menstruating or not. About 0.3% of births in England and Wales, Scotland, Australia, and New Zealand are in women aged 45 and over.

Flatulence and Auricular Fibrillation

Q.—*At the age of 75 I have auricular fibrillation and at night I suffer from flatulence, lasting one to two hours and relieved often by a mixture of alkalis. When walking, say 20 to 50 yards (18 to 45 m.), I get flatulence, and have to stop for one or two minutes. I very seldom have anginal pains. Can you explain the correlation between flatulence and the cardiac condition?*

A.—Flatulence is a common symptom in disorders of the heart. This is specially true of syndromes due to deficiency in the coronary supply, such as coronary thrombosis. In general, patients are unable to distinguish sternal oppression from true dyspeptic symptoms; what is taken to be flatulence often leads to attempts to eructate, which aggravates the symptoms. Flatulence related to exertion is probably of coronary origin and is the counterpart of anginal pain; this symptom should, therefore, be treated by preparations designed to relax coronary spasm and promote the coronary circulation. In the present case the occasional anginal pains indicate that there is at least a coronary element in the whole syndrome. It is suggested that this patient should take tab. trinitrin. gr. 1/100 (0.65 mg.), allowing it to dissolve under the tongue a few minutes before starting walking. If it is effective in preventing the onset of flatulence on exertion, it might be taken six or more times daily in the same manner. For the prevention of nocturnal flatulence, trinitrin might be tried on retiring, or, alternatively, a simple mixture of chloral hydrate with bromide, gr. 10 (0.65 g.) of each. Trinitrin might be employed also for the relief of nocturnal attacks. Should these methods fail to relieve the flatulence some carminative may be given, such as peppermint water ʒss (14 c.cm.); if sodium bicarbonate gr. 30 (2 g.) is added to this, gas is produced in the stomach; this evokes the desire to belch, and once the gas is expelled from the stomach the sensation of flatulence is likely to disappear.

INCOME TAX

Travelling Expenses and Cost of Shelter

C. P. asks can a claim be made for (*a*) the cost of visiting an infant welfare centre 20 miles from home, and (*b*) the use from time to time for professional purposes of an air-raid shelter which cost over £100.

*** (*a*) If, as would seem to be the case, the work at the Centre is carried out as a separate appointment unconnected with the general practice of C. P.'s husband, the answer is "No." (*b*) No part of the cost of the shelter can be claimed, as that ranks as capital outlay and not as a current expense. So far as annual expenses are concerned the rule with regard to the use of premises for professional purposes is that a proportion of the annual value as assessed to income tax can be allowed. But if, as is assumed, no increase was made in the assessment of the main premises because of the erection of the shelter, C. P. cannot establish that any tax is being paid on the annual value of the shelter and no claim would be competent.

Appointment: Travelling Expenses

H. S. is in practice and sees patients at his residence and elsewhere. He also acts as chairman of a Medical Recruiting Board and incurs expense in travelling from his residence to the place of meeting. Can he claim these expenses as a deduction?

*** The expense is not deductible under Schedule E, and the only way in which H. S. appears able to obtain any relief in respect of the cost of travelling is for the remuneration in question to be included in his general earnings for assessment under Schedule D and not assessed separately under Schedule E. Whether the authorities will consent to that arrangement we cannot say, but H. S. may be advised to make such a request through the local inspector of taxes.

Cost of Fitting Out Laboratory

F. H. S. has spent between £50 and £100 on fitting out a laboratory for research work from which he gets no financial return. Can he recover tax on this amount?

*** No. In the first place the expenditure is in the nature of capital outlay, and, in the second place, as no financial return is expected the expenditure was not "money wholly and exclusively laid out for the purposes of the profession" in the sense in which those words would probably be construed by the court.

LETTERS, NOTES, ETC.

Surface-marking the Lower Border of the Liver

Mr. L. R. C. AGNEW (Glasgow) writes: In his letter (Dec. 29, p. 941) Capt. R. P. Gillespie mentioned an auscultatory method, new to him, for defining the lower border of the liver. It may be of interest to note that a similar method, so-called "auscultatory percussion," has been used for defining cardiac surface-markings. The stethoscope chest-piece is placed on the sternum just proximal to the xiphoid process. A forefinger is now made to scratch the skin surface from the posterior axillary line to the relevant border of the heart. A sudden increase in intensity and clarity of the hitherto muffled sound of scratching proclaims that the cardiac border has been reached. Repetition of this process from varying points on the thoracic skin enables the entire area of cardiac dullness to be ascertained. Similarly, by vertically scratching the right side of the abdomen the liver border may also be mapped out. Capt. Gillespie seems correct in his surmise that this method for surface-marking the liver finds no place in clinical teaching. I am within six months of the Final M.B. examination and have never heard of it in lectures or seen it mentioned in current British textbooks. Auscultatory percussion of the heart is, however, mentioned in Major's *Physical Diagnosis* (1944, p. 198) and other American works. In obese subjects especially I have found the test of value, both for heart and liver surface anatomy, but have usually used it to confirm clinical findings based on the traditional methods of palpation, percussion, and auscultation.

Surg. Lieut. M. B. CARSON, R.N.V.R. (Stevenage), writes: With reference to his letter dealing with the surface-marking of the lower border of the liver, Capt. R. P. Gillespie is mistaken in supposing that the method he describes indicates the lower hepatic margin. The "loud rubbing noise" is only obtained while the stroking finger is passing over the region of the stomach and ceases when the limits of that organ are reached. This method was taught me as a student as a rapid means of obtaining a rough idea of the size of the stomach, and, so far as I am aware, is not of Russian or Polish origin.

Dr. HILDA M. DENHOLM-YOUNG (Farningham, Kent) writes: With reference to Capt. R. P. Gillespie's letter, the auscultatory method is not the monopoly of Russians and Poles, for it has been taught in Edinburgh for at least 16 years.

*** And in a certain well-known London hospital the method was taught at least 20 years ago.—ED., *B.M.J.*

Venereology

Lieut.-Col. HENRY RICHARDS, R.A.M.C., writes from the M.E.F.: Due to the mail's delays a copy of the *Journal* for Oct. 20, 1945, reached me yesterday. I cannot agree with Brig. T. E. Osmond (p. 556) that the term "venereologist" has supplanted "dermatologist." We yet have specialists in dermatology in the Services, and the Dermatological Section of the Royal Society of Medicine still flourishes. The ophthalmologist and the laryngologist instanced by Brig. Osmond do make a study of the eye and the larynx respectively. The specialist in venereal diseases does not necessarily make a study of venery. This is my objection to the term "venereologist." Nor do I agree that by being destructive my criticism is thereby valueless. If my car is not running well it is my job to point this out, but I call on an expert to diagnose and remedy the defect. My letter drew attention to what I regard as a defect in medical terminology. That it was not altogether without value is proved by the erudite, if light-hearted, intervention of Dr. Robert Cook (Nov. 3, p. 634).

R.A.M.C.T.A. Reunions

Lieut.-Col. J. N. GROVES, D.S.O., R.A.M.C., writes from 11, Charmouth Road, St. Albans, Herts: Will all old T.A. R.A.M.C. officers please note that there is a social evening on the first Friday of every month at 7 p.m. at the Central Mess of the Duke of York's Headquarters, Chelsea. The 140 County of London Field Ambulance have already formed an Old Comrades Association for all pre-war and wartime members. It is desired to make this a general meeting-place of all officers and other ranks of 140 Field Ambulance, 13/4 London G.H. 141 Field Ambulance, the 8th Field Hygiene Section, and any affiliated units. Many old faces were there on Jan. 4.

Obstetric Instruments Wanted

Dr. STEFAN LASKI, of the Polish Forces, Camis Eskin Camp, Helensburgh, nr. Glasgow, writes: Forgive me please my asking you to help me to get an obstetric instrument set. The conditions in Poland require to do the obstetric operations in patients' lodgings; because of the war I lost my set in Poland and all my efforts to get another set in Great Britain were unsuccessful. The shopkeepers answer it is impossible to get now even a new midwife forceps, so I intended to ask you kindly to help me to buy a set. I can pay any reasonable price. Can any reader help?